



September, 1926

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# AMAZING STORIES

HUGO GERNSBACK  
EDITOR



Stories by  
**H. G. WELLS**  
**JULES VERNE**  
**GARRETT P. SERVISS**

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JULES VERNE'S TOMBSTONE AT AMIENS  
PORTRAYING HIS IMMORTALITY

# AMAZING STORIES

Vol. 1 No. 6  
Sept., 1926

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#### OUR COVER

shows an exciting episode from "In the Abyss," by H. G. Wells, wherein the explorer first sees the chameleon-like fish people roaming at the bottom of the ocean.

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**THE DIAMOND LENS**, by Fitz-James O'Brien. This is one of the world's classics. A story written years ago, but which retains its flavor to the fullest extent and brings in an exquisite microscopic being, the enchanting heroine of the story.

**THE PURCHASE OF THE NORTH POLE**, by Jules Verne. Here we give our readers the second and concluding installment of this entrancing story. The author's ingenuity in evolving a cause for the remarkable fault in mathematics is only revealed in the last lines.

**A COLUMBUS OF SPACE**, by Garrett P. Serviss. The story draws to an end. Attack, adventure, captivity are all successfully coped with. And then comes a tragic termination and the reader does not know by what possible means the denouement can be brought about. As always with this author, the science of the story is absolutely correct in all details.

**THE ISLAND OF DR. MOREAU**, by H. G. Wells. One of the most astounding stories ever written by the well-known author. We have never read a story that held our interest at such a feverish pitch of excitement as does this classic; we will not give away the contents to spoil it all for you. You may take our word for it that you never read anything as weird and amazing as "The Island of Dr. Moreau."

**BLASPHEMERS' PLATEAU**, by Alexander Snyder, wherein some eminent scientists successfully experiment with infinite secrets, until they become drunk with their power. Then another scientist arrives on a friendly visit. It is a powerful and gripping story which is sure to hold your interest. This story was crowded out of the September issue.

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These twenty regular monthly features are the reasons why it is the greatest and most complete Radio Magazine in the World.

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Mr. Hugo Gernsback who writes the editorial of *Radio News* has been spoken of as a man who is responsible for more technical developments of radio apparatus than any other single individual in the industry. Each month he writes one of his interesting articles on radio's past, present or future.

## 2—CONTESTS

Every month *Radio News* offers hundreds of dollars in prize contests which are open to all readers. In a recent \$300 "What's Wrong" contest over ninety-seven hundred replies were received.

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This is a most interesting department for set owners and users governing general subjects which have to do with broadcast reception and the various uses of radio receivers in the home.

## 4—RADIODICS

This is the humor section of *Radio News*. It contains some very unusual jokes pertaining to radio and makes very interesting light reading.

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This department keeps you in a picture way in touch with the very latest inventions in radio.

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Every month this department of *Radio News* gives the reader a group of the people who entertain during the month from our prominent broadcast stations.

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This regular monthly feature contains an absolutely active and up-to-date list of every broadcast station in the United States, together with wave length and power.

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## 12—WITH THE AMATEUR

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This department keeps you in touch with what is going on in radio outside of the United States. It is one of *Radio News*'s most interesting departments.

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The march of radio develops many events which are of interest to the general public. These are covered in a special department of *Radio News*.

## 17—RADIO MANUFACTURING

The production and marketing of the radio receivers or parts you use are shown in this section of *Radio News*. It is always an interesting corner for our readers.

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VOLUME  
1

# AMAZING STORIES

THE  
MAGAZINE  
OF  
SCIENTIFIC FICTION

SEPTEMBER, 1926  
NO. 6

HUGO GERNBSACK, *Editor*  
DR. T. O'CONOR SLOANE, Ph.D.; *Associate Editor*  
WILBUR C. WHITEHEAD, *Literary Editor*  
C. A. BRANDT, *Literary Editor*

Editorial and General Offices: 53 Park Place, New York, N. Y.

*Extravagant Fiction Today*

*Cold Fact Tomorrow*

## EDITORIALLY SPEAKING

By HUGO GERNBSACK



NUMBER of letters have reached the Editor's desk recently from enthusiastic readers who find fault with the name of the publication, namely, AMAZING STORIES.

These readers would greatly prefer us to use the title "Scientific fiction" instead. The message that these letters seem to convey is that the name really does not do the magazine justice, and that many people get an erroneous impression as to the literary contents from this title.

Several years ago, when I first conceived the idea of publishing a science-fiction magazine, a circular letter was sent to some 25,000 people, informing them that a new magazine by the name "Scientific fiction" was shortly to be launched. The response was such that the idea was given up for two years. The plain truth is that the word "Scientific fiction" while admittedly a good one, scares off many people who would otherwise read the magazine.

Before the name of AMAZING STORIES was first decided upon, a prize contest was held, but no better name than AMAZING STORIES, out of a list of some 200 names, could be found. The name "Scientific fiction" would undoubtedly frighten many readers who would perhaps otherwise be interested in this new type of fiction. After mature thought, the publishers decided that the name which is now used was after all the best one to influence the masses, because anything that smacks of science seems to be too "deep" for the average type of reader.

We knew that once we could make a new reader pick up AMAZING STORIES and read only one story, our cause was won with that reader, and this is indeed what happened. Although the magazine is not as yet six months old, we are already printing 100,000 copies per month, and it also seems that whenever we get a new reader we keep him. A totally unforeseen result of the name, strange to say, was that a great many women are already reading the new magazine. This is most encouraging. We know that they must have picked up AMAZING STORIES out of curiosity more than anything else, and found it

to their liking, and we are certain that if the name of the magazine had been "Scientific fiction," they would not have been attracted to it at a newsstand.

And after all, we really need not make any excuses for AMAZING STORIES, because the title represents exactly what the stories really are. There is a standing rule in our editorial offices that unless the story is *amazing*, it should not be published in the magazine. To be sure, the amazing quality is only *one* requisite, because the story must contain science in *every* case.

A great many letters are also received, from readers who wish to contribute material to AMAZING STORIES. The formula in all cases is that first the story must be frankly amazing; second, it must contain a scientific background; third, it must possess originality. At the present time we are booked far ahead for long stories of the novel type, and therefore can only accept short new stories. Stories that do not run more than six to eight pages when printed are most welcome providing they fill the above requirements. We believe the era of science-fiction is just commencing. We are receiving a great many fine short stories, and as time goes on we will publish more and more new material besides the classics which we are publishing now, and for which we have many requests from readers.

The Editors also wish it to be understood that this is *your* magazine in all respects; they will always be guided by the wishes of the majority. We will publish from time to time a sort of voting blank in which you may show your preference as to the type of stories published in the various issues. You will find such a blank elsewhere in this issue.

At this point we wish to say that the voting contest which we conducted several months ago has now been closed. The vote stood as follows:

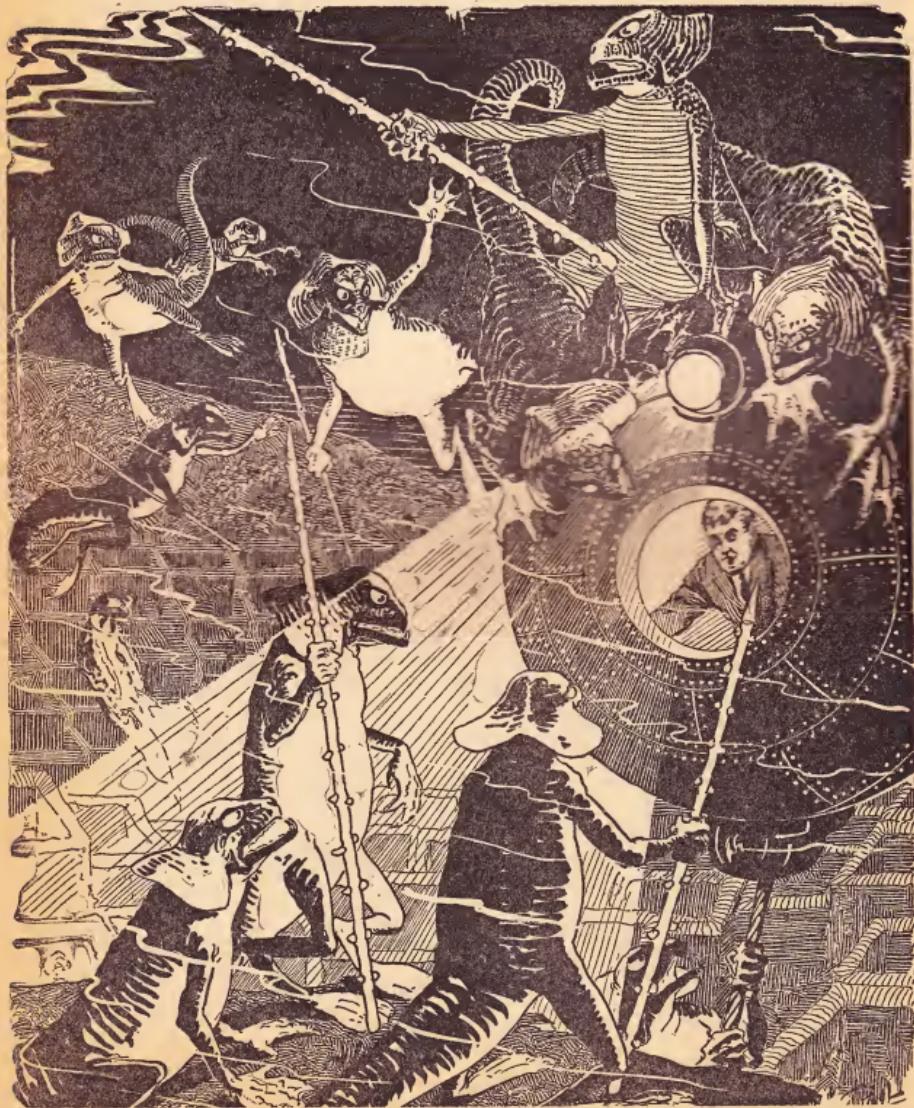
Leave the magazine monthly as it is now—498.  
Make it a semi-monthly ..... 32,544

We will probably accede to the wishes of the readers as soon as the circulation of the magazine has become stabilized, which will probably be some time before the end of this year.

Mr. Hugo Gernsback speaks every Monday at 9 P. M. from WRNY on various scientific and radio subjects.

# In The Abyss

~ By H.G. Wells ~



To this he was being towed, as a balloon might be towed by men out of the open country into a town. He approached it very slowly, and very slowly the dim irradiation was gathered together into more definite shapes.

## A Five-Mile Descent Into the Ocean

**T**HE lieutenant stood in front of the steel sphere and gnawed a piece of pine splinter. "What do you think of it, Steevens?" he asked.

"It's an idea," said Steevens, in the tone of one who keeps an open mind.

"I believe it will smash—flat," said the lieutenant.

"He seems to have calculated it all out pretty well," said Steevens, still impartial.

"But think of the pressure," said the lieutenant. "At the surface of the water it's fourteen pounds to the inch, thirty feet down it's double that; sixty, treble; ninety, four times; nine hundred, forty times; five thousand, three hundred—that's a mile—it's two hundred and forty times fourteen pounds; that's—let's see—thirty hundredweight—a ton and a half, Steevens; a ton and a half to the square inch. And the ocean where he's going is five miles deep. That's seven and a half—"

"Sounds a lot," said Steevens, "but it's jolly thick steel."

The lieutenant made no answer, but resumed his pine splinter. The object of their conversation was a huge ball of steel, having an exterior diameter of perhaps nine feet. It looked like the shot for some Titanic piece of artillery. It was elaborately nested in a monstrous scaffolding built into the framework of the vessel, and the gigantic spars that were presently to sling it overboard gave the stern of the ship an appearance that had raised the curiosity of every decent sailor who had sighted it, from the Pool of London to the Tropic of Capricorn. In two places, one above the other, the steel gave place to a couple of circular windows of enormously thick glass, and one of these, set in a steel frame of great solidity, was now partially unscrewed. Both the men had seen the interior of this globe for the first time that morning. It was elaborately padded with air cushions, with little

studs sunk between bulging pillows to work the simple mechanism of the affair.

Everything was elaborately padded, even the Myers apparatus which was to absorb carbonic acid and replace the oxygen inspired by its tenant, when he had crept in by the glass manhole, and had been screwed in. It was so elaborately padded that a man might

have been fired from a gun in it with perfect safety. And it had need to be, for presently a man was to crawl in through that glass manhole, to be screwed up tightly, and to be flung overboard, and to sink down—down—down, for five miles, even as the lieutenant said. It had taken the strongest hold of his imagination; it made him a bore at mess; and he found Steevens, the new arrival aboard, a godsend to talk about it, over and over again.

"It's my opinion," said the lieutenant, "that that glass will simply bend in and bulge and smash, under a pressure of that sort. Daubrée has made

rocks run like water under big pressure—and, you mark my words—"

"If the glass did break in," said Steevens, "what then?"

"The water would shoot in like a jet of iron. Have you ever felt a straight jet of high pressure water? It would hit as hard as a bullet. It would simply smash him and flatten him. It would tear down his throat, and into his lungs; it would blow his ears in—"

"What a detailed imagination you have!" protested Steevens, who saw things vividly.

"It's a simple statement of the inevitable," said the lieutenant.

"And the globe?"

"Would just give out a few little bubbles, and it would settle down comfortably against the day of judgment, among the oozes and the bottom clay—with poor Elstead spread over his own smashed cushions like butter over bread."

He repeated this sentence as though he liked it very much. "Like butter over bread," he said.

"Having a look at the jigger?" said a voice, and Elstead stood behind them, spick and span in white, with a cigarette between his teeth, and his eyes smiling out of the shadow of his ample hat-brim. "What's that about bread and butter, Weybridge? Grumbling as usual about insufficient pay of naval officers? It won't be more than a day now before I start. We are to get the slings ready-to-day. This clean sky and gentle swell is just the kind of thing for swinging off a dozen tons of lead and iron; isn't it?"

"It won't affect you much," said Weybridge.

"No. Seventy or eighty feet down, and I shall be there in a dozen seconds, there's not a particle moving, though the wind shriek itself hoarse up above, and the water lifts half-way to the clouds. No. Down there—" He moved to the side of the ship and the other two followed him. All three leaned on their elbows and stared down into the yellow-green water.

## A Description of the Apparatus

"BUT," said Elstead, finishing his thought aloud.

"Are you dead certain that clockwork will act?" asked Weybridge presently.

"It has worked thirty-five times," said Elstead. "It's bound to work."

"But if it doesn't—"

"Why shouldn't it?"

"I wouldn't go down in that confounded thing," said Weybridge, "for twenty thousand pounds."

"Cheerful chap you are," said Elstead, and spat sociably at a bubble below.

"I don't understand yet how you mean to work the thing," said Steevens.

"In the first place, I'm screwed into the sphere," said Elstead, "and when I've turned the electric light off and on three times to show I'm cheerful, I'm swung out over the stern by that crane, with all those big lead sinkers slung below me. The top lead

*SCIENCE informs us that all life originally came from the sea, whether plant life or animal life, all had its origin in the waters of the ocean. Man's ancestry can readily be traced back to the fish, from our spinal column to our hair. Hair, science teaches us, is nothing but a modified fish scale. The thought that intelligent thinking beings could live at the bottom of the ocean should, therefore, not be scoffed at. It is this theme that our famous author has chosen in this fascinating tale, which you will follow with breathless interest down to the last word.*

weight has a roller carrying a hundred fathoms of strong cord rolled up, and that's all that joins the sinkers to the sphere, except the slings that will be cut when the affair is dropped. We use cord rather than wire rope because it's easier to cut and more buoyant—necessary points, as you will see.

"Through each of these lead weights you notice there is a hole, and an iron rod will be run through that and will project six feet on the lower side. If that rod is rammed up from below, it knocks up a lever and sets the clockwork in motion at the side of the cylinder on which the cord winds.

"Very well. The whole affair is lowered gently into the water, and the slings are cut. The sphere floats—with the air in it, it's lighter than water—but the lead weights go down straight and the cord runs out. When the cord is all paid out, the sphere will go down too, pulled down by the cord."

"But why the cord?" asked Steevens. "Why not fasten the weights directly to the sphere?"

"Because of the smash down below. The whole affair will go rushing down, mile after mile, at a headlong pace at last. It would be knocked to pieces on the bottom if it wasn't for that cord. But the weights will hit the bottom, and directly they do, the buoyancy of the sphere will come into play. It will go on sinking slower and slower; come to a stop at last, and then begin to float upward again.

"That's where the clockwork comes in. Directly the weights smash against the sea bottom, the rod will be knocked through and will kick up the clockwork, and the cord will be rewound on the reel. I shall be lugged down to the sea bottom. There I shall stay for half an hour, with the electric light on, looking about me. Then the clockwork will release a spring knife, the cord will be cut, and up I shall rush again, like a soda-water bubble. The cord itself will help the flotation."

"And if you should chance to hit a ship?" said Weybridge.

"I should come up at such a pace, I should go clean through it," said Elstead, "like a cannon ball. You needn't worry about that."

"And suppose some nimble crustacean should wriggle into your clockwork——"

"It would be a pressing sort of invitation for me to stop," said Elstead, turning his back on the water and staring at the sphere.

#### Starting the Descent

THEY had swung Elstead overboard by eleven o'clock. The day was serenely bright and calm, with the horizon lost in haze. The electric glare in the little upper compartment beamed cheerfully three times. Then they let him down slowly to the surface of the water, and a sailor in the rudder chains hung ready to cut the tackle that held the lead weights and the sphere together. The globe, which had looked so large on deck, looked the smallest thing conceivable under the stern of the ship. It rolled a little, and its two dark windows, which floated uppermost, seemed like eyes turned up in round wonderment at the people who crowded the rail. A voice wondered how Elstead liked the rolling. "Are you ready? sang out the commander. "Ay, ay, sir!" "Then let her go!"

The rope of the tackle tightened against the blade and was cut, and an eddy rolled over the globe in a grotesquely helpless fashion. Some one waved a

handkerchief, some one else tried an ineffectual cheer, a middy was counting slowly, "Eight, nine, ten!" Another roll, then with a jerk and a splash the thing righted itself.

It seemed to be stationary for a moment, to grow rapidly smaller, and then the water closed over it, and it became visible, enlarged by refraction and dimmer, below the surface. Before one could count three it had disappeared. There was a flicker of white light far down in the water, that diminished to a speck and vanished. Then there was nothing but a depth of water going down into blackness, through which a shark was swimming.

Then suddenly the screw of the cruiser began to rotate, the water was crackled, the shark disappeared in a wrinkled confusion, and a torrent of foam rushed across the crystalline clearness that had swallowed up Elstead. "What's the idea?" said one A.B. to another.

"We're going to lay off about a couple of miles, fear he should hit us when he comes up," said his mate.

The ship steamed slowly to her new position. Aboard her almost every one who was unoccupied remained watching the breathing swell into which the sphere had sunk. For the next half-hour it is doubtful if a word was spoken that did not bear directly or indirectly on Elstead. The December sun was now high in the sky, and the heat very considerable.

"He'll be cold enough down there," said Weybridge. "They say that below a certain depth sea water's always just about freezing."

"Where'll he come up?" asked Steevens. I've lost my bearings."

"That's the spot," said the commander, who prided himself on his omniscience. He extended a precise finger south-eastward. "And this, I reckon, is pretty nearly the moment," he said. "He's been thirty-five minutes."

"How long does it take to reach the bottom of the ocean?" asked Steevens.

"For a depth of five miles, and reckoning—as we did—an acceleration of two feet per second, both ways, is just about five minutes."

#### Suspense and Waiting

"THEN he's overdue," said Weybridge.

"Pretty nearly," said the commander. "I suppose it takes a few minutes for that cord of his to wind in."

"I forgot that," said Weybridge, evidently relieved.

And then began the suspense. A minute slowly dragged itself out, and no sphere shot out of the water. Another followed, and nothing broke the low oily swell. The sailors explained to one another that little point about the winding-in of the cord. The rigging was dotted with expectant faces. "Come up, Elstead!" called one hairy-chested salt impatiently, and the others caught it up, and shouted as though they were waiting for the curtain of a theatre to rise.

The commander glanced irritably at them.

"Of course, if the acceleration's less than two," he said, "he'll be all the longer. We aren't absolutely certain that was the proper figure. I'm no slavish believer in calculations."

Steevens agreed concisely. No one on the quar-

ter-deck spoke for a couple of minutes. Then Steevens' watch-case clicked.

When, twenty-one minutes after, the sun reached the zenith, they were still waiting for the globe to reappear, and not a man aboard had dared to whisper that hope was dead. It was Weybridge who first gave expression to that realization. He spoke while the sound of eight bells still hung in the air. "I always distrusted that window," he said quite suddenly to Steevens.

"Good God!" said Steevens; "you don't think—?"

"Well!" said Weybridge, and left the rest to his imagination.

"I'm no great believer in calculations myself," said the commander dubiously, "so that I'm not altogether hopeless yet." And at midnight the gun-boat was steaming slowly in a spiral round the spot where the globe had sunk, and the white beam of the electric light fled and halted and swept discontentedly onward again over the waste of phosphorescent waters under the little stars.

"If his window hasn't burst and smashed him," said Weybridge, "then it's a cursed sight worse, for his clockwork has gone wrong, and he's alive now, five miles under our feet, down there in the cold and dark, anchored in that little bubble of his, where never a ray of light has shone or a human being lived, since the waters were gathered together. He's there without food, feeling hungry and thirsty and scared, wondering whether he'll starve or stifle. Which will it be? The Myers apparatus is running out, I suppose. How long do they last?"

"Good heavens!" he exclaimed; "what little things we are! What daring little devils! Down there miles and miles of water—all water, and all this empty water about us and this sky. Gulfs!" He threw his hands out, and as he did so, a little white streak swept noiselessly up the sky, travelled more slowly, stopped, became a motionless dot, as though a new star had fallen up into the sky. Then it went sliding back again and lost itself amidst the reflections of the stars and the white haze of the sea's phosphorescence.

#### A Slow Recovery

**A**T the sight he stopped, arm extended and mouth open. He shut his mouth, opened it again, and waved his arms with an impatient gesture. Then he turned, shouted "El-stead ahoy!" to the first watch, and went at a run to Lindley and the search-light. "I saw him," he said. "Starboard there! His light's on and he's just shot out of the water. Bring the light round. We ought to see him drifting, when he lifts on the swell."

But they never picked up the explorer until dawn. Then they almost ran him down. The crane was swung out and boat's crew hooked the chain to the sphere. When they had shipped the sphere, they unscrewed the manhole and peered into the darkness of the interior (for the electric light chamber was intended to illuminate the water about the sphere, and was shut off entirely from its general cavity).

The air was very hot within the cavity, and the indiarubber at the lip of the manhole was soft. There was no answer to their eager questions and no sound of movement within. Elstead seemed to be lying motionless, crumpled up in the bottom of the globe. The ship's doctor crawled in and lifted him out to the men outside. For a moment or so they

did not know whether Elstead was alive or dead. His face, in the yellow light of the ship's lamps, glistened with perspiration. They carried him down to his own cabin.

He was not dead, they found, but in a state of absolute nervous collapse, and besides cruelly bruised. For some days he had to lie perfectly still. It was a week before he could tell his experiences.

Almost his first words were that he was going down again. The sphere would have to be altered, he said, in order to allow him to throw off the cord if need be, and that was all. He had had the most marvellous experience. "You thought I should find nothing but ooze," he said. "You laughed at my explorations, and I've discovered a new world!" He told his story in disconnected fragments, and chiefly from the wrong end, so that it is impossible to retell it in his words. But what follows is the narrative of his experience.

#### Describing His Experience

**I**T began atrociously, he said. Before the cord ran out, the thing kept rolling over. He felt like a frog in a football. He could see nothing but the crane and the sky overhead, with an occasional glimpse of the people on the ship's rail. He couldn't tell a bit which way the thing would roll next. Suddenly he would find his feet going up, and try to step, and over he went rolling, head over heels, and just anyhow, on the padding. Any other shape would have been more comfortable, but no other shape was to be relied upon under the huge pressure of the nethermost abyss.

Suddenly the swaying ceased; the globe righted, and when he had picked himself up, he saw the water all about him greenish-blue, with an attenuated light filtering down from above, and a shoal of little floating things went rushing up past him, as it seemed to him, towards the light. And even as he looked, it grew darker and darker, until the water above was as dark as midnight sky, albeit of a greener shade, and the water below black. And little transparent things in the water developed a faint glint of luminosity, and shot past him in faint greenish streaks.

And the feeling of falling! It was just like the start of a lift, he said, only it kept on. One has to imagine what that means, that keeping on. It was then of all times that Elstead repented of his adventure. He saw the chances against him in an altogether new light. He thought of the big cuttlefish people knew to exist in the middle waters, the kind of things they find half digested in whales at times, or floating dead and rotten and half eaten by fish. Suppose one caught hold and wouldn't let go. And had the clockwork really been sufficiently tested? But whether he wanted to go on or to go back mattered not the slightest now.

In fifty seconds everything was as black as night outside, except where the beam from his light struck through the waters, and picked out every now and then some fish or scrap of sinking matter. They flashed by too fast for him to see what they were. Once he thinks he passed a shark. And then the sphere began to get hot by friction against the water. They had underestimated this, it seems.

The first thing he noticed was that he was perspiring, and then he heard a hissing growing louder under his feet, and saw a lot of little bubbles—very

little bubbles they were—rushing upward like a fan through the water outside. Steam! He felt the window, and it was hot. He turned on the minute glow-lamp that lit his own cavity, looked at the padded bath by the studs, and saw he had been traveling one or two minutes. It came into his head that the window would crack through the conflict of temperatures, for he knew the bottom water is very near freezing.

Then suddenly the floor of the sphere seemed to press against his feet, the rush of bubbles outside grew slower and slower, and the hissing diminished. The sphere rolled a little. The window had not cracked, nothing had given, and he knew that the dangers of sinking, at any rate, were over.

In another minute or so he would be on the floor of the abyss. He thought, he said, of Steevens and Weybridge and the rest of them five miles overhead, higher to him than the very highest clouds that ever floated over land are to us steaming slowly and staring down and wondering what had happened to him.

He peered out of the window. There were no more bubbles now, and the hissing had stopped. Outside there was a heavy blackness—as black as black velvet—except where the electric light pierced the empty water and showed the colour of it—a yellow-green. Then three things like shapes of fire swam into sight, following each other through the water. Whether they were little and near or big and far off he could not tell.

Each was outlined in a bluish light as bright as the lights of a fishing smack, a light which seemed to be smoking greatly, and all along the sides of them were specks of this, like the lighted portholes of a ship. Their phosphorescence seemed to go out as they came into the radiance of his lamp, and he saw then that they were little fish of some strange sort, with huge heads, vast eyes, and dwindling bodies and tails. Their eyes were turned towards him, and he judged they were following him down. He supposed they were attracted by his glare.

Presently others of the same sort joined them. As he went on down, he noticed that the water became of a pallid colour, and that little specks twinkled in his ray like motes in a sunbeam. This was probably due to the clouds of ooze and mud that the impact of his leaden sinkers had disturbed.

By the time he was drawn to the lead weights he was in a dense fog of white that his electric light failed altogether to pierce for more than a few yards, and many minutes elapsed before the hanging sheets of sediment subsided to any extent. Then, lit by his light and by the transient phosphorescence of a distant shoal of fishes, he was able to see under the huge blackness of the super-incumbent water an undulating expanse of grayish-white ooze, broken here and there by tangled thickets of a growth of sea lilies, waving hungry tentacles in the air.

Farther away were the graceful, translucent outlines of a group of gigantic sponges. About this floor there were scattered a number of bristling flatfish tufts of rich purple and black, which he decided must be some sort of sea-urchin, and small, large-eyed or blind things having a curious resemblance, some to woodlice, and others to lobsters, crawled sluggishly across the track of light and vanished into the obscurity again, leaving furrowed trails behind them.

Then suddenly the hovering swarm of little fishes veered about and came towards him as a flight of starlings might do. They passed over him like a phosphorescent snow, and then he saw behind them some larger creature advancing towards the sphere.

#### An Unknown Creature of the Abyss

**A**T first he could see it only dimly, a faintly moving figure remotely suggestive of a walking man, and then it came into the spray of light that the lamp shot out. As the glare struck it, it shut its eyes, dazzled. He stared in rigid astonishment.

It was a strange vertebrate animal. Its dark purple head was dimly suggestive of a chameleon, but it had such a high forehead and such a braincase as no reptile ever displayed before; the vertical pitch of its face gave it a most extraordinary resemblance to a human being.

Two large and protruding eyes projected from sockets in chameleon fashion, and it had a broad reptilian mouth with horny lips beneath its little nostrils. In the position of the ears were two huge gill-covers, and out of these floated a branching tree of coralline filaments, almost like the dendroid gills that very young rays and sharks possess.

But the humanity of the face was not the most extraordinary thing about the creature. It was a biped; its almost globular body was poised on a tripod of two frog-like legs and a long thick tail, and its fore limbs, which grotesquely caricatured the human hand, much as a frog's do, carried a long shaft of bone, tipped with copper. The colour of the creature was variegated; its head, hands, and legs were purple; but its skin, which hung loosely upon it, even as clothes might do, was a phosphorescent gray. And it stood there blinded by the light.

At last this unknown creature of the abyss blinked its eyes open, and, shading them with its disengaged hand, opened its mouth and gave vent to a shouting noise, articulate almost as speech might be, that penetrated even the steel case and padded jacket of the sphere. How a shouting may be accomplished without lungs Elstead does not profess to explain. It then moved sideways out of the glare into the mystery of shadow that bordered it on either side, and Elstead felt rather than saw that it was coming towards him. Fancying the light had attracted it, he turned the switch that cut off the current. In another moment something soft dabbed upon the steel, and the globe swayed.

Then the shouting was repeated, and it seemed to him that a distant echo answered it. The dabbing recurred, and the globe swayed and ground against the spindle over which the wire was rolled. He stood in the blackness and peered out into the everlasting night of the abyss. And presently he saw, very faint and remote, other phosphorescent quasi-human forms hurrying towards him.

Hardly knowing what he did, he felt about in his swaying prison for the stud of the exterior electric light, and came by accident against his own small glow-lamp in its padded recess. The sphere twisted, and then threw him down; he heard shouts like sounds of surprise, and when he rose to his feet, he saw two pairs of stalked eyes peering into the lower window and reflecting his light.

#### More Strange Experiences

**I**N another moment hands were dabbing vigorously at his steel casing, and there was a sound,

horrible enough in his position, of the metal protection of the clockwork being vigorously hammered. That, indeed, sent his heart into his mouth, for if these strange creatures succeeded in stopping that, his release would never occur. Scarcely had he thought as much when he felt the sphere sway violently, and the floor of it press hard against his feet. He turned off the small glow lamp that lit the interior, and sent the ray of the large light in the separate compartment out into water. The sea-floor and the man-like creatures had disappeared, and a couple of fish chasing each other dropped suddenly by the window.

He thought at once that these strange denizens of the deep sea had broken the rope, and that he had escaped. He drove up faster and faster, and then stopped with a jerk that sent him flying against the padded roof of his prison. For half a minute, perhaps, he was too astonished to think.

Then he felt that the sphere was spinning slowly, and rocking, and it seemed to him that it was also being drawn through the water. By crouching close to the window, he managed to make his weight effective and roll that part of the sphere downward, but he could see nothing save the pale ray of his light striking down ineffectively into the darkness. It occurred to him that he would see more if he turned the lamp off, and allowed his eyes to grow accustomed to the profound obscurity.

In this he was wise. After some minutes the velvety blackness became a translucent blackness, and then, far away, and as faint as the zodiacal light of an English summer evening, he saw shapes moving below. He judged these creatures had detached his cable, and were towing him along the sea bottom.

And then he saw something faint and remote across the undulations of the submarine plain, a broad horizon of pale luminosity that extended this way and that way as far as the range of his little window permitted him to see. To this he was being towed, as a balloon might be towed by men out of the open country into a town. He approached it very slowly, and very slowly the dim irradiation was gathered together into more definite shapes.

It was nearly five o'clock before he came over this luminous area, and by that time he could make out an arrangement suggestive of streets and houses grouped about a vast roofless erection that was grotesquely suggestive of a ruined abbey. It was spread out like a map below him. The houses were all roofless enclosures of walls, and their substance being as he afterwards saw, of phosphorescent bones, gave the place an appearance as if it were built of drowned moonshine.

Among the inner caves of the place waving trees of crinoid stretched their tentacles, and tall, slender, glassy sponges shot like shining minarets and lilies of filmy light out of the general glow of the city. In the open spaces of the place he could see a stirring movement as of crowds of people, but he was too many fathoms above them to distinguish the individuals in those crowds.

#### A City of the Abyss and Its People; the Explorer's End

THEN slowly they pulled him down, and as they did so, the details of the place crept slowly upon his apprehension. He saw that the courses of cloudy buildings were marked out with beaded lines of round objects, and then he perceived that at sev-

eral points below him, in broad open spaces, were forms like the encrusted shapes of ships.

Slowly and surely he was drawn down, and the forms below him became brighter, clearer, more distinct. He was being pulled down, he perceived, towards the large building in the center of the town, and he could catch a glimpse ever and again of the multitudinous forms that were lugging at his cord. He was astonished to see that the rigging of one of the ships, which formed such a prominent feature of the place, was crowded with a host of gesticulating figures regarding him, and then the walls of the great building rose about him silently, and hid the city from his eyes.

And such walls they were, of water-logged wood and twisted wire-rope, and iron spars, and copper, and the bones and skulls of dead men. The skulls ran in zigzag lines and spirals and fantastic curves over the building; and in and out of their eye-sockets, and over the whole surface of the place, lurked and played a multitude of silvery little fishes.

Suddenly his ears were filled with a low shouting and a noise like the violent blowing of horns, and this gave place to a fantastic chant. Down the sphere sank, past the huge pointed windows, through which he saw vaguely a great number of these strange, ghostlike people regarding him, and at last he came to rest, as it seemed, on a kind of altar that stood in the centre of the place.

And now he was at such a level that he could see these strange people of the abyss plainly once more. To his astonishment, he perceived that they were prostrating themselves before him, all but one, dressed as it seemed in a robe of placoid scales, and crowned with a luminous diadem, who stood with his reptilian mouth opening and shutting, as though he led the chanting of the worshippers.

A curious impulse made Elstead turn on his small glow-lamp again, so that he became visible to these creatures of the abyss, albeit the glare made them disappear forthwith into night. At this sudden sight of him, the chanting gave place to a tumult of exultant shouts; and Elstead, being anxious to watch them, turned his light off again, and vanished from before their eyes. But for a time he was too blind to make out what they were doing, and when at last he could distinguish them, they were kneeling again. And thus they continued worshipping him, without rest or intermission, for the space of three hours.

Most circumstantial was Elstead's account of this astounding city and its people, these people of perpetual night, who have never seen sun or moon or stars, green vegetation, nor any living, air-breathing creatures, who know nothing of fire, nor any light but the phosphorescent light of living things.

Startling as is his story, it is yet more startling to find that scientific men, of such eminence as Adams and Jenkins, find nothing incredible in it. They tell me they see no reason why intelligent, water-breathing, vertebrated creatures, inured to a low temperature and enormous pressure, and of such a heavy structure that neither alive nor dead would they float, might not live upon the bottom of the deep sea, and quite unsuspected by us, descendants like ourselves of the great Theriomorphs of the New Red Sandstone age.

We should be known to them, however, as strange,  
*(Continued on page 575)*

# A COLUMBUS of SPACE

~ By Garrett P. Serviss ~

Author of "The Moon Metal", "The Second Deluge", etc.



The creature was crushing the plane, bending its sides like pasteboard with that mighty trunk. For my part, I was paralyzed by the awful spectacle, but Edmund's sharp command brought me to my senses.

# What Went Before

**T**HE hero of the story, Edmund Stonewall, has discovered how to utilize atomic energy. He constructs a car that can traverse interplanetary space, actuated by this energy, and with two friends starts on a trip to the planet Venus, not disclosing to them his intention at first. He reaches a rather desolate part of the planet, where daylight never appears, sees the almost ape-like inhabitants, cave dwellers, who wish to sacrifice one of them to the gods, and they rescue the proposed victim only by killing the High Priest. They get in among the valleys in a mountain of ice, on the edge of the dark face of the planet, tak-

ing with them some of the cave dwellers on sleds. The car with sleds fastened alongside and all but one of the cave-dwellers upon them, is carried now along a sort of glacial stream, but soon sleds and the unfortunate occupants disappear, and our travellers are left with only one of the ape-like cave dwellers, Juba, as company. Now they reach the warm regions of Venus, where there is perpetual day, and there find a highly developed race who communicate with each other by a species of telepathy, and our travelers are enchanted by the beautiful appearance of the beings, who are superior in every way to terrestrial mankind.

## A COLUMBUS OF SPACE

By GARRETT P. SERVISS

### Part II

#### CHAPTER IX.

##### An Astonishing Reception at the Capital



DIDN'T feel myself quite all the confidence that I tried to express to Henry, for this scrape differed essentially from any that we had been in yet; but still I relied a good deal upon Edmund's resources.

It presently became evident that the man he had killed was a personage of importance—an admiral, perhaps. Anyway, it was clear that they meant to make us pay for what we had done.

There was one thing, however, which gave me a little comfort, and awoke the hope that we might yet escape. This was the behavior of Ala. She seemed to be not much more than a girl in age, but she was treated on all hands with the greatest respect. Her word was law.

That was evident the moment they began to come aboard our ship. It was not only our crew, if I may so call them, that obeyed her, but everybody. And it was delightful to see the dignity with which she bore herself.

She was a very princess in manner and carriage, and yet there was something peculiarly gentle in all her ways which made her irresistibly winning.

I could not think that, as far as I might depend upon her, she would approve the exaction of a very severe punishment for Edmund's unintentional offense, and I was the more convinced of this when I reflected upon what I had noticed in their bearing toward one another during the trip. Considering where we were, no doubt it may seem ridiculous to speak of such a thing as love!

But there is love at first sight on the earth—why not there, a world inhabited by such beings as we had encountered, who certainly were human in their characteristics, and almost more than human in their beauty?

While, on the other hand, Edmund was as many a representative of the race of Adam as I have ever looked upon, and he had the light of genius in his eyes.

Anyway, take it how you will, I believed that a mutual attraction had been felt by these two inhabitants of different worlds, and I began to think that this very thing had been in Edmund's mind when he forbade us to resist.

As soon as our captors found that we offered no resistance, they partially released their grasp, but we were all bound, so that we could not escape.

Having passed over the land, we rose a little higher, for there was a range of hills ahead of us, and then, flanked on both sides by other air-ships, we held our course toward the distant mountains. Whether the suggestion came from Edmund or not, I cannot say, but our car, which had been towed over the sea, was now lifted upon one of the larger air-ships, and it continued to accompany us. I felt very glad to see that.

All our hopes of ultimate escape centered upon our own original car!

#### Floating Aerial Palaces

IN the course of several hours of very rapid traveling we began to draw near the mountains, and now those singular cobweb-like objects which we had caught sight of in the far distance became very plain to view. Although prisoners, we were not

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IN this installment, Professor Serviss introduces us into the daylight as well as the civilized hemisphere of the planet Venus. We become acquainted with the high culture of the inhabitants of the planet, with their thought reading ability, with their prismatic, silent, but colorful language, as well as the grotesque dangers of the twilight zone, where prehistoric beasts as high as houses are still roaming in their virgin forests.

Particular attention is called to Professor Serviss's accurate astronomical and scientific knowledge, and if the planet Venus is indeed enveloped in a dense atmosphere, as now believed by most scientists, you may be certain that conditions exactly as described by the author prevail.

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## AMAZING STORIES

kept separate, and no attempt was made to prevent our conversing.

As the strange objects grew more distinct, Jack, who had recovered his equanimity, was, as usual, the first to speak.

"By Jove! Edmund," he said, "here's a new chance for your genius for explaining mysteries. What are those things?"

"I'm surprised that you haven't guessed," was the reply. "It's perfectly plain what they are."

"Not airships?"

"Certainly not. They're palaces."

"Palaces?"

"Why, of course."

"Castles in Spain, I reckon," said Jack disdainfully.

"No, simply castles in the air. Why shouldn't they float such things here? This atmosphere is exactly suited for them. You see how easily these airplanes ride. It is a region of atmospheric calm.

"Only the most gentle breezes are stirring. I doubt if there is ever a high wind here. It's exactly what we should expect of these people. They are almost as much inhabitants of the air as of the land. And could any idea be more beautiful than that?"

Nobody replied. We were lost in admiration, both of the idea and of the scene. It seemed "probable" that Edmund was right again.

As we continued to approach we became convinced that he was, for the details of the airy architecture began to be visible.

First, we saw an immense number of towers looming up, with stage above stage, like the huge steel buildings of New York before they received their outer coverings, but infinitely lighter and more delicate; truly fairy constructions, glittering with thousands of brilliant points.

Then, below these, apparently anchoring the floating structures to the earth, appeared long cables which, from our distance resembled gossamer threads bespangled with dew. Still nearer, and at last we believed that we could see people in the buoyant towers.

A few minutes later there was no doubt about it, for the colors broke forth, and that marvelous interchange of chromatic signals, which had so astounded and delighted us on nearing the coast, was resumed.

"It is my belief," said Edmund, "that, notwithstanding the buoyancy of the air, they are compelled to use power to keep those aerial edifices afloat. You will see, when we are nearer, that every stage is furnished with revolving screws, which help to hold them in position. Without that I am sure they would not stay up, particularly when there are people upon them."

And so it turned out. In a short time we were near enough to see the screws working, in a maze of motion, like the wings of a multitude of insects. The resemblance to insects' wings was increased by their gauzy structure and they flashed and glittered as if enameled. The vast towers swayed slightly to and fro with a sinuous motion.

Between us and the swimming palaces was another range of hills, and as we approached near enough to look over into the valley behind we uttered a cry of surprise.

A vast city made its appearance, a magnified counterpart of the aerial city about it. I have seen Constantinople in the morning sun from across the Bosphorus; I have beheld Damascus, with its spires; I have admired the domes and minarets of Cairo, shining in the gold of an Egyptian sunset—but all of these spectacles, combined with all that the imagination has pictured of such scenes, and multiplied a thousandfold in beauty and complexity, would give but a faint idea of what was spread before us.

"It is surely the capital," said Edmund. "There can be nothing greater than this."

## The Capital of the Kingdom

IT was indeed the capital, for in the midst of it of it rose an edifice of unparalleled splendor, which could only be the palace of a mighty king.

Above this magnificent building, which gleamed with metallic reflections, although it was as light and airy in construction as frostwork, rose the loftiest of the aerial towers, a hundred stories in height.

While the other craft fell back, we kept on until we reached the principal stage of this tower. From below ran a crowd of smaller airships, which ran up and down the sides of the tower, stopping at various stages, discharging their living cargoes.

"Elevators," said Edmund sententiously.

Glancing around, we saw that the same scenes were occurring at all the neighboring towers. They were filling up with people, and the continual rising and descending of the little craft that bore them, the holiday aspect of the gay colors everywhere displayed, and the general brilliancy of the spectacle, produced a deep impression upon us. But the most astonishing effect still awaited us.

Just as our vessel reached the landing stage the enormous tower, from foot to apex, broke out with all the hues of the prism, like an enchanted rose-tree, covered with millions of brilliant flowers at the touch of a wand. The effect was overwhelming.

The air became tremulous with rippling colors, whose vibrant waves, with quick succession of concordant tints, gave to the eye an exquisite pleasure, akin to that which the ear receives from a carillon of bells. Our companions, and the people crowded on the tower, seemed transplanted with ecstatic delight.

"The music of the spectrum!" cried Edmund. "The diapason of color! This is their national hymn, written on a prismatic instead of a sonometric staff. And, mark me, this has a significance beyond your conjectures. Such a reception can only mean that our conductress is a person of the most exalted rank."

We were not long in doubt as to that. Our craft was made fast, and Ala was the first to step upon the landing stage and pass into the tower. She was received on every hand with the most respectful salutations. A tall young man, as handsome as Apollo, met her with a profound genuflection, and conducted her beyond our sight.

Then we were led ashore.

The curiosity that we excited was immense. They pressed and thronged about us, men, women, and children, speaking rapidly in their low tones, and exchanging thoughts by glances of the eye.

We could feel what they said about us. We knew that they regarded us as inhabitants of the mysterious, unvisited side of their world, and the contrast in appearance between Juba and us amazed them, as it had amazed their countrymen who first beheld us.

But they were not afforded much opportunity to study us, for we were hustled through the throng, without catching sight of Ala again, and presently we embarked with our captors on one of the "elevators," and made a thrillingly rapid descent. Arrived at the bottom we were led through some long stone-walled passages into a veritable dungeon.

And there they left us!

I wondered if this had been done by Ala's orders. The reflection shook my confidence in my theory.

"I wasn't prepared for this," said Edmund, speaking through the darkness, for we could not see one another; "but I couldn't have been better provided if I had foreseen the emergency."

Almost as he spoke, a brilliant light illuminated the place. He had turned on a pocket electric lamp. We looked about, and found that we were in a square chamber, about fifteen feet on a side, with walls of heavy, closely dressed and matched stones.

"They make these things solid enough down here," said Jack, "however light and airy they may be above."

#### In Prison

HENRY sank upon the floor, the picture of dejection and despair. I expected from him another outbreak like that in the ice-mountains, but he spoke not a word. His heart was too full for utterance. I pitied him so much that it served to reanimate my spirits a little.

"Come now," I said, "don't take it that way, man. Have confidence in Edmund. He has never yet been beaten."

"He's got his hands full this time, I reckon," Jack broke in pessimistically. "What do you think, Edmund? Can your interatomic energy bore a hole through these walls?"

"If I had anything to work with, you'd see," Edmund replied. "But there's no occasion to worry. We'll come out all right."

It was his universal remark when in difficulties, and somehow it always enheartened us.

Juba, more accustomed than we were to such situations, seemed to be the least disturbed member of the party. He rolled his huge eyes around, and then lay down on the floor and seemed at once to fall asleep.

"That's a good idea," said Edmund, smiling. "It's a long time since we've had a nap. Let's all try a little sleep, I may dream of some way out of this."

It was a fact that we were exhausted for want of sleep, and, in spite of our situation, we fell into deep slumber, as peaceful as if we had been in our beds at home. Edmund had turned out the lamp, and the silence and the darkness were equally profound.

#### Planning An Escape

I HAVE no idea how long I slept. I only know that I awoke startled by the light, and found them all on their feet, except Juba, who sat on the

floor blinking his big eyes. Edmund, seeing me rise, said at once:

"I've found a way out. I'm half disposed not to try it, because I have an idea that we'll come out all right anyhow. But when you are in a hole, and Providence throws you a rope, perhaps it's best to test it."

"What have you found out?"

"Something extremely simple. This is no prison-cell, but a part of what we should call the engine-rooms. Probably it's a mere store-room. They have put us here for convenience, trusting more to the darkness than to the lock, for the corridors outside are as black as Erebus and as crooked as a labyrinth."

"How do you know?"

"Because while you slept I investigated. The lock is nothing. The merest tyro could pick it. Fortunately they never guessed I had a lamp in my pocket."

"Around a corner, a little way from our door, there is another door, opening into a passage that leads past a power-house. That passage gives access to a sort of garage of airplanes, and when I stole into it, five minutes ago, there was not a soul in sight.

"We'll simply slip out there, and if I can't run away with one of their machines I'm no engineer."

I thought of Ala again, and Edmund's expression of confidence in our ultimate safety made me hesitate to take this new risk, but Jack and Henry were eager to get out, and we decided to try.

Motioning Juba to follow, we stole out, and stepping noiselessly by the power-house, where we saw several men at work, we found ourselves among the airplanes. Edmund had no difficulty in opening a door, which led out into a deserted courtyard.

I never admired Edmund more than when I saw the masterly way in which he manipulated one of the airplanes.

One would have said that it was his own invention, so well did he handle it.

It rested on runners, and all we had to do was to push it out of the door, while Edmund turned on the power. We jumped aboard, and in a moment were circling in the air.

At this instant we were seen! There was a flashing of signals, and two airplanes shot into sight above us.

"Now for a chase!" said Edmund.

We darted upward in a long curve.

The others turned and swooped upon us!

#### CHAPTER X.

##### A Parley Ten Miles High

WITH a quick turn, Edmund dodged the nearest pursuer, and we rose so rapidly that in two seconds we were skirting the great tower. Then others saw us, and forty airships joined in the chase. Jack's spirits rose with the excitement.

"Sorry to run away from these Venuses," he said. "but no dungeons for me, if you please."

"We're not away yet," Edmund responded over his shoulder.

Indeed, we were not!

The air-ships swarmed out on every side, like hornets from their nests. The air seemed full of them. I gave up all hope of escape, but Edmund was like a racer who hears the thunder of rival hoofs behind him. He put on more and more speed, until we had to hang to anything handy to prevent being blown off by the wind we made or whirled overboard on sharp turns.

**Crash!** We had run straight into a huge airplane that persisted in getting in our way. She dipped and rolled like a floating log. I saw the men on her deck tumble over one another as we shot by, but fortunately none fell off. I say fortunately, because surely it would not have bettered our case to kill any more of them just now.

Busy as he was, dodging and turning, Edmund did not cease occasionally speaking to us.

"There's just one chance to beat them," he said, "and only one; and I'm going to try it as quick as I can get out of this press."

I had no notion of what he meant, but a few minutes later I divined his intention. All the while, I observed, he was working higher and higher. The spectacle of that magnificent city, spreading every moment wider as we rose, and changing shapes and colors like a view in a kaleidoscope, would have held me enthralled with admiration—if I had had time to fix my attention upon it.

Still we shot upward, making the necessary circles as small as possible; and so recklessly had Edmund turned on the speed that at last it really began to look as if we should escape. Two-thirds of our pursuers were far below our level. But the others comprehended our plan and rose with us, some endeavoring to get ahead and cross our bows.

While I saw that Edmund's idea was to hold a skyward course, I was far from guessing the particular reason he had for doing so. Finally Jack spoke up.

"See here, Edmund," he said, "if you keep on going up instead of running off one way or another, they'll corner you in the middle of the sky. Don't you see how they have circled out on all sides, so as to surround us? Then, when we get as high as we can go, they will simply close in all round, and we'll be in a trap."

"Oh, no, we won't," said Edmund.

"I don't see why."

"Because they can't go as high as we can."

"I'd like to know why they can't. I guess they understand these things as well as you do?"

"Can a fish live out of water?" asked Edmund, laughing.

"What are you driving at?"

"Why, it's plain enough. These people are used to an atmosphere two or three times as dense as that which we have on the earth. It doesn't trouble our breathing much, having plenty of oxygen; but we can go where they would gasp for breath, because we can stand the rare air at a great height."

"My only doubt is about the flying ability of the airplane; but luckily this is a light car, and being under way, I think she'll run as high as we need to go, and stay there. You'll see them dropping off pretty soon."

#### A Strange Flight

AND they did drop off with great rapidity. Their own strategy, which Jack had called attention to, was simply a playing into our hands. They really thought to catch us in the middle of a gradually contracting circle, when, to their evident amazement, we rose into a region of the atmosphere where they knew that they could not live. Edmund fairly roared with laughter when he saw the success of his ruse.

But there was one thing that he had forgotten, and it struck to our hearts when we became aware of it. Poor Juba! He could endure this rare air no better than our pursuers. Already, unnoticed in the excitement, he had fallen upon the deck, where he lay gasping like a newly landed sturgeon. At last he ceased to struggle.

"Good Heavens!" cried Jack, "the poor fellow is dying."

"We must save him," said Edmund.

"But how? You wouldn't go back down there?"

"If we drop down near the limit, that stops the others," said Edmund; "he'll revive, and then we can dodge up and down enough to keep out of danger both ways."

No sooner said than done, and we began to descend. I reflected that here was the only mistake that Edmund had made during the whole trip; I mean the mistake of bringing along the natives from the caverns.

It was their presence that had prevented us from sailing triumphantly over the crystal mountains, at an elevation where there would have been no danger; it was because of them that we had wrecked the car; and now it was the presence of Juba that prevented us from keeping in a safe place. This wrought upon my mind so that finally I spoke about it to Edmund. Instantly Henry chimed in:

"Better let him die than lose our own lives."

"Stop!" said Edmund sternly. "A thousand times I have cursed myself for my error. I thought that those fellows would be of use. Instead, they were an encumbrance. But it was not their fault that they came. It is I that am responsible for their fate, and I shall never forgive myself; neither shall I ever abandon the last one that is left. I'd give up my own life rather."

That ended the discussion. We continued to drop, until, with much chafing of his hairy hands and body, and the aid of a little stimulant poured into his mouth from a pocket flask, we brought poor Juba round.

In the meantime the crowd of air-ships watching us from below began to close in their circle, evidently under the belief that we had been compelled to descend on account of the rarity of the atmosphere, and that at last they would have us sure. It was impossible not to admire their preparations for catching the expected fish.

#### Aerial Tactics on the Large Scale

THERE was such a multitude of the craft that they were able to form themselves into the semblance of a huge bag-net, the edge carried as high as they could go, while the sides and bottom were composed of airships packed as close almost as meshes. This great "net" was a mile across.

Edmund laughed again as he looked down into it.

"No, no, *messieurs*," he shouted, "we're no gudeons. You'll have to do better than that."

"See here, Edmund," cried Jack suddenly, "why don't you make off and leave them? By keeping just out of their reach, as you have said, we can easily escape?"

"And leave our own car!" was the reply.

"Jove!" said Jack, "I never thought of that. But, see here, in that case, what did you run away for at all?"

"Because," said Edmund quietly, "I thought it better to parley than to lie in prison."

"Parley? How are you going to parley?"

"That remains to be seen, but I guess we'll manage it."

We were now, as I estimated, about ten miles high. When we were highest, the great cloud dome that I have described was but a little above our heads, and we might have gone up into it and been lost from sight.

Our pursuers circled about to keep their positions a quarter of a mile or so below us. They were evidently parleying on their side, for waves of color flowed all about them, and the spectacle was so brilliant that we almost forgot our situation while watching it.

"I suppose you'll play them a prismatic symphony?" said Henry mockingly.

"Perhaps. Who knows?" replied Edmund coolly. "I've no doubt that the materials are aboardship."

A minute later he added:

"If I'd been here a month, I'd do it sure. But I haven't had time to study that subject yet. We must manage otherwise."

While we had been talking Edmund had not relaxed his vigilance, and two or three times he baffled a sudden dart of the enemy by circling desirably high above their heads, each time returning to a lower level as soon as Jube began to gasp.

At last we noticed a movement among the crowd below which betokened something important. In a moment we saw what it was. A gorgeous airplane, by far the handsomest that we had seen, had arrived in the midst of the flotilla. The others made way for it, and it came on directly towards us, as high as it could get. Immediately Edmund dropped down as if to meet it.

"I thought she'd come," I heard him mutter.

My heart jumped at the words, and in an instant my theory had possession of me again. I was sure that he had referred to Ala, and once more the conviction grew very strong within me that there was at least the beginning of an understanding between her and Edmund.

I felt glad; and, even in our apparently desperate situation, that feeling was not merely on account of the promise of escape. It partook of the sentiment which every human being experiences when he sees two young people's hearts opening to each other.

"Love will pull us through, if nothing else can," I said to myself. But I gave no hint to Jack or Henry, who would probably have laughed at me.

### Ala on Her Flying Barge

**I**T was a very Cleopatra's barge that approached us, and Edmund didn't stop until we could see the eyes of the others. Then both air-ships, as by common consent, came to rest, simply soaring in parallel circles to maintain their buoyancy.

Ala stood forward on the deck, with her female attendants about her.

Exactly how they managed it I do not know; but I have already told you of the strange power of mind-reading, or telepathy, or whatever it was, that these people possessed, and that Edmund had made some little progress in this mysterious method of thought transference. He and Ala looked at each other, and I could see signs of pleasure in her face.

For half an hour or more we hung there, slowly circling, but without change of distance; and all the time those two continued their silent converse, occasionally emphasized by gestures, which even we could understand. Finally it was plain that a conclusion had been reached. There was a flashing of colors between Ala's airplane and the others, and all began to descend, we along with them.

After a while Edmund turned to us and said:

"Well, boys, it's coming out all right; and isn't she a queen worthy of Venus?"

"Is she really a queen?" asked Jack.

"I've seen," Edmund replied, in his old manner, smiling a little. "But let me tell you the rest."

Then he went on to tell us that the trouble had all come, as we had suspected, out of his having killed a person of very great importance. But we had never guessed how extremely important that person was from our own point of view.

*He was a prince of Venus!*

"My luck is almost as bad as that of Oedipus," said Edmund. "But, prince or not, he acted like a blanked idiot; and, as you know, I had to kill him."

"Of course, you understand that there is a certain amount of guesswork in all this. I have had to reason from analogy, putting this and that together. My 'conversation' with Ala was not exactly as free as a tête-à-tête at home. But the fact that she could read my thoughts with comparative ease helped us along, because it was more important that she should understand our side of the story than that I should be able to understand hers."

"I may be mistaken in the prince idea, but I think not. Anyway, the fellow was of that degree of importance that Ala did not dare to interfere with their bringing us to book about it. As I told you before, I had confidence that, once I could make clear my motives, we should come out all right. But when the chance of escape from the dungeon presented itself, this idea of getting beyond their reach in the high air, and holding a parley, flashed into my mind, and I determined to try it."

"It ought to have been plain to them why you shot that chap," said Jack.

"It was plain to Ala," Edmund replied, "and I know that she intended to use the fact for our exculpation. But I was afraid of the others. Remember that we are nothing to them, except objects of curiosity. If it had been a common fellow that I had killed, it might have been different; and they

would have done a little reasoning among themselves."

"But what are they going to do with us now?" I asked.

"They're going to bring us to a trial of some kind. But don't forget that we've got a very powerful advocate."

## CHAPTER XI.

### Before the Throne of Venus

**O**NE of the things which at first surprised me after our surrender was the fact that they did not throw a "crew" aboard our craft, instead of allowing us to navigate it unguarded. But this, after Edmund had told his story, only tended to strengthen my faith in Ala.

While we were dropping down toward the city, with a great throng of air-ships attending us, Edmund opened his heart concerning another curious point in the difficulties besetting us.

"I suppose you noticed how close we were to the cloud dome," he said. "Well, there's nothing surprising in the existence of a shell of clouds surrounding this part of Venus. Astronomers on earth looking at her long ago suspected it, and it strikes me as a providential thing for these people. Without it they could not endure the unending sunshine. But it's going to render it difficult for us to make them understand where we come from."

"How so?" asked Jack.

"Because they have never seen a star, and they can have no idea of the existence of other planets. The cloud dome floats above the level to which they can rise with safety, so I am sure that they have never penetrated it. Even if they did get above it, they would not see much on account of the sunshine. There would still be enough air there to diffuse the rays and make objects in the heavens invisible."

"But what difference does it make whether they know that we come from the earth, or think that we are from the other side of their own planet?"

"It makes this difference," Edmund replied, "that if they could be made to understand that we are entirely foreign to their world, they might treat us with greater consideration. Everything helps, and I have no doubt that the inspiration is as active here as it is at home. Anyway, I mean to do my best to make them understand where we come from."

When we returned to the great palace a change of treatment awaited us.

### Preparing to Meet the Ruler

**I**NSTEAD of being conducted to a dungeon, we were led into a splendid apartment, and a repast was spread before us. We had need of it, for we had had nothing to eat since our escape. The room in which we found ourselves had no windows, but it was brilliantly lighted from the walls by something resembling the mercury vapor lamps we have at home.

Edmund thought that they were based upon a similar principle. We were placed at a table, Juba with us, and food was set before us. I observed that, as among the inhabitants of the caverns, the food consisted mainly of vegetables, except that

there were birds of a sort unknown to us, but of an exquisite taste.

More interesting than the food, however, were those who served it. They were beautiful girls, attired after the manner of all the inhabitants here, and extremely graceful in their movements.

Jack was captivated at once.

"Jove!" he cried. "This is something like! Edmund, I'm obliged to you once more. I wish I could speak the language."

"You can," said Edmund, "but you don't know it. They understand you better than you think, and you would do well to keep a guard upon yourself."

Jack, however, was irrepressible. He ogled the pretty waitresses; and presently, with an engaging smile—or what he intended as such—he ventured to touch one of them on the arm. You should have seen the effect!

The girl drew herself up and escaped from his touch as if it had been that of a serpent. Then she looked at him. How she did look! It was a glance that shot straight through him.

But her resentment did not last. A minute later she smiled, and her beauty seemed more dazzling than before. Jack was quite overcome. He made an awkward attempt to express an apology, which was instantly comprehended; and the behavior of the girl and of her companions indicated that, while they would suffer no familiarity, they were easily mollified and wished us no ill.

They gave very little attention to Juba, who, nevertheless, blinked at them from under his eyeshades, and was evidently more amazed by their beauty than we were.

"You see," said Edmund, "that you are not among savages here. New York restaurant manners won't pass on Venus."

Suddenly Jack, whose thoughts were always jumping about, turned from his admiration of the girls and exclaimed.

"See here, Edmund, why in the world didn't they shoot at us when we were running away? There were enough of them to bring us down, even if they had been bad marksmen."

"They didn't shoot," was the reply, "because they've nothing to shoot with. I've already told you that I think they are an unwarlike people. But they're not cowards. You've seen evidence enough of that. They were not terrified by my killing that fellow, and I reckon that they'll fight if there should be occasion for fighting. Only I think that they are not natural slaughterers, like us, and I shouldn't be surprised if war is unknown on Venus."

"All the same, I'm glad we've got our automatic pistols yet," said Jack.

"Yes," Edmund responded, "and we may have occasion for them; and for the rifles, too, if we can get them back; but it may be that they'll prove useful in a way very different from what you imagine."

We did not press Edmund for an explanation of this remark; but I was sure he had some particular reason for what he had said, and I turned it over in my mind without arriving at any conclusion.

When out repast was finished a number of "cops," as Jack gaily dubbed them, came to conduct us from the refectory.

"Now, for the Supreme Court, or the King's Bench!" said Jack.

It was even as he had surmised. We were led through a maze of passages and elegant chambers, until we emerged into a vast and splendid apartment. It was nearly square—at least a hundred feet the longest way—and, like the place where we had dined, lighted from the walls and ceiling. The floor seemed to be of rose-colored marble, and the walls and ceiling were composed of equally rich materials, most beautifully decorated. But what absolutely fascinated the eye in this great apartment was the play of living colors, projected from a huge circle, high on the wall, at the farther end.

#### Chromatic Music

**C**HROMATIC music again," said Edmund.

Just as at a great reception on the earth an orchestra pours forth soft melodies to entrance the senses of the guests, while not inhibiting their conversation, so here this harmonic play of delightful colors filled the air, to the evident delectation of the brilliant throng that was assembled. Even we felt the effect stealing deliciously through our nerves.

As a way was cleared for us, everybody standing aside to make room when we advanced, we caught sight—at the head of the vista, thus formed through the center of the apartment—of a magnificent throne, and seated upon it was Ala.

Then she must, indeed, be the queen! But immediately I noticed, with some disappointment, that she was not alone.

By her side, and occupying another throne hardly less brilliant than hers, was a tall man, with features like those of a Greek statue of Zeus, and long curling hair as white as snow. The severity of his aspect formed a discouraging contrast with the smiling beauty of the queen.

Now, you will understand, of course, that everything that followed in the way of communication between these people and us was conducted by those peculiar methods of interchanging thoughts and ideas which I have before described. There was no talking, except in very low tones, among the chief actors on the other side. It was a repetition of what had occurred during the parley between the airplanes.

Yet, so expressive were the countenances before us, and so transparent the meaning of the gestures, that even Jack, Henry, and I could catch considerable of the drift, while Edmund seemed to understand it astonishingly well. What was visible recorded itself in my memory, but the details of what occurred in the way of communication were related to me afterward by Edmund. For the sake of clearness I am going to treat it practically as if it had been a regular conversation. While I may thus be compelled to use words which were not actually spoken, yet the meaning was there.

As soon as our examination begun the colors ceased to play from the circle above the throne.

"Orchestra stopped," whispered the irrepressible Jack in my ear.

The first person to speak, if I may so put it, was Ala. She fixed her eyes upon Edmund in the peculiar manner which we had already learned to recognize as preliminary to a wordless conversation,

and her face became more expressive than that of the most perfect actress I have ever seen. One could read upon it the question:

"Who are you, and whence came you?"

I was thrilled with pride as I glanced at Edmund. He stood alone, close before the throne, in an open space, while we were placed a little at one side. He carried himself erect, without a sign of trepidation, with an air of complete confidence and self-control, and almost, I thought, of superiority. The painting of "Columbus Before Isabella" flashed upon my recollection, though the circumstances were so different.

As the question beamed to him, he lifted his hand and pointed significantly overhead. Evidently, he was going at once to proclaim our origin from another world. I remembered what he had lately said about the difficulty of making these people comprehend such a thing, and I thought I could detect the perplexity in Ala's mind.

Edmund's gesture spoke plainly enough, but in reading his thought she met an insuperable obstacle. She could not comprehend the idea of another world in the sky.

#### Juba Comes to Their Assistance

**J**UBA was then that Juba unexpectedly came to our aid. He had been watching the proceedings with intense interest, and I was delighted by the comprehension which he showed. Although possessing a much lower order of intelligence than the brilliant beings who surrounded us, and nothing of their culture, yet he was an inhabitant of their planet, and who can tell what ancient ancestral lines may have connected them?

His people, too, shared in the singular power of communicating ideas without words which was characteristic of intellectual life on Venus. To him, on the other hand, there was little mystery in what Edmund was trying to make known. He was familiar with the starry sky and a worshipper of the earth.

With boldness that surprised me, he stepped to Edmund's side, and, lifting the shades from his eyes, joined—if I may so say—in the conversation. Ala and her white-haired companion stared at him, a little startled at first by his interference. But it was clear in a minute that they understood him.

He made them, at least, partially comprehend that above the dome of clouds there was another world known to him, and that we came from thence. No doubt that thought had been in his mind before. He also, it was plain, made them realize the fact that he himself belonged to their own planet—to the dark, mysterious side of it—which they had vainly sought to penetrate. Wonder overspread their faces as the truth dawned upon them.

I could feel all eyes now turned upon us with redoubled interest and curiosity. I believed that I could detect a deepening of color in Ala's cheeks as she again confronted Edmund's glance.

Thus the ice was broken, and, the fundamental idea being communicated, it rested upon Edmund alone to conduct the affair again. I saw that the examination was taking another direction.

Whether they were satisfied or not about our claims to be inhabitants of another world, they were evidently not disposed to let us off on that ac-

count. And I thought that the white-haired Zeus seemed especially insistent on this point, and I detested him for it.

I tried to imagine what he was, but I couldn't satisfy myself. King, or judge, or priest, or what? Jack saw the new drift also, and whispered to me:

"The old scoundrel! I'd like to try my pistol on him!"

For the first time the old man, who, I must confess, possessed a dignity of bearing that was extremely imposing; looked Edmund squarely in the eye and used some significant gestures. Edmund did not quail. But the rest of us certainly did when a way was suddenly opened in the throng, and the body of the fellow that had been shot, lying on a rich bier, was borne into the centre of the open space and set down at Edmund's feet.

#### A Beautiful Heroine

**H**E glanced at it perfectly unmoved; and then, with a smile, turned to look at Ala. Her manner assured me that she understood the justification that he claimed for himself, and that, at least, she approved it.

But old Zeus was not to be placated. That was plain by his look. Ala spoke to him earnestly, calling into action all the means of communicating thoughts, ideas, and arguments that they possessed in such abundance; but he was immovable. At length she turned to Edmund, and some communication took place between them which puzzled him for little while; but suddenly a light broke over his countenance, and, turning aside his head, he sent my hopes plump down to zero with ten solemn words:

"The old judge is the father of the dead man!"

"Then there's no hope for us," I muttered.

"Wait and see," was the reply.

Everything depended upon Ala. Assuming that she was interested in Edmund and wished to save him, had she the power to do it? Was she really queen, as we had supposed? And, if so, was her authority unlimited?

These questions raced through my mind while a conference took place round the throne. Several dignified-looking individuals, with gems glittering on their toga-like garments, were called into consultation. There was plainly a division among them. I could see that some sided with Ala, and others with the old man.

The features of the latter became more and more stern; but as he continued to insist upon his revengeful purpose, a strange light began to glow in Ala's eyes. Her color deepened. Lines of strength appeared in her beautiful face. One could feel the resistance that she offered rising to a passion; and at last, at a particularly savage communication from her relentless opponent, she suddenly rose to her feet, transformed!

The majestic splendor of her countenance was thrilling. Lifting her jeweled arms, she commanded the attendants to remove the bier, and was instantly obeyed. Then she beckoned to Edmund; and as he approached the foot of the throne, she descended three steps, rested her hand upon his shoulder, and looked about her with an air which said plainer than words:

"It is the power of my protection that environgs him. Touch him, you who dare!"

#### CHAPTER XII.

#### The Value of a Good Fist

**T**HE sensation produced by Ala's dramatic interruption was indescribable. Everybody pressed nearer. Murmurs rose on all sides, whether of approval or dissent I had no time to guess. The white-haired judge, his face afame with passion, sprang to his feet, with uplifted hand, as if about to attack Edmund. Instinctively, I felt for my pistol. But Edmund, as if he had divined my thought, glanced sharply at me and shook his head.

We did not appreciate then what Ala had done, but we soon learned what it was.

Her act and her gesture had conveyed to the minds of the others a meaning unguessed by us. According to the immortal customs of her race, in thus embracing Edmund with her arm, she had not merely taken him under her protection—she had proclaimed to all the world that he was her chosen mate. If we had known this at the beginning, we should have been able to understand the tremendous excitement in the assemblage.

And yet it ought to have been evident, too, from her expression. If ever defiant, self-sacrificing love wrote itself upon a woman's face, it was visible in hers. She had need of all her resolution; for the anger of the old man on the throne was nothing in comparison with the fury of a new actor who now thrust himself to the front. It was the Apollo-like young man who had led her from the air ship on our first arrival at the aerial tower.

#### A Rival Suitor, Ingra, and An Encounter

**N**O explanations were needed to enable us to understand the relation in which he stood to the parties. He was evidently Ala's suitor, and jealousy had turned him into a maniac. He shouldered aside those who stood in his path, and in an instant confronted Edmund. He was more than six feet tall, broad-shouldered, and had the powerful build of an athlete.

My heart leaped into my throat, and again I gripped my pistol; but Edmund's recent warning restrained me. Then, once more, a glow of admiration for our leader ran through me. He faced his formidable enemy without the slightest fear or flinching. Only I saw that his fists were clinched, and the recollection flashed upon me that he had been the favorite pupil of the best boxing master in New York.

In a fraction of a second the two glared at each other; while Ala, with a low cry, sought to draw Edmund away. But the other sprang forward, like a maddened bull.

Whack! Edmund's right fist caught his opponent on the point of the jaw, and the fellow shot back into the crowd and tumbled in a heap.

Lightning is not quicker than was Edmund's next move.

"Out with your pistols and follow me!" he shouted to us, and seizing Ala, he pushed his way through the throng, which gave back at his im-

petuous onset. We were after him in an instant, pistols in hand.

The sight of the latter had its effect. They knew the power of the mysterious weapon, and their momentary fear gave us an initial advantage. Still, that would have availed us nothing in the end, but for the fact, which Edmund had counted upon, that there was a large portion of the assemblage who were our friends—or, rather, friends of Ala—and disposed to take her part.

Edmund had noted where her advocates were most numerous in the throng, and toward them he pushed. In a few seconds they had closed round us. The uproar became deafening. I doubt if ever so much noise was made on Venus before. It seemed to drive the crowd wild.

But Ala proved her queenly quality. With a proud air she drew herself erect, her eyes flashed, and with a few commanding gestures she reduced those immediately about us to silence. Then, at her order, an escort was formed, we were placed in the midst of it, and slowly we marched through the press toward the entrance to the chamber.

#### In the Queen's Audience Chamber

**N**O resistance was offered. The faces about us rather expressed astonishment than any intention at interference. Glancing behind, I saw the white head of the old man on the throne, violently agitated; but if he gave any orders concerning us, they were not executed, and without opposition we passed out of the door.

Turning to the right, we quickly entered an apartment—smaller than the others—but no less splendid. Here there was another throne. Ala advanced to it, mounted the steps, retaining Edmund's hand; and taking her seat, calmly faced the spectators, while we stood close by, at the foot of the throne.

I think it will be best, in view of the dramatic events which were to follow, to tell you, in as few words as possible, the result of the episode that I have just described.

The room in which we now found ourselves was the private audience chamber of the queen. The apartment in which the examination had taken place was a kind of combination of a royal audience chamber and a supreme court-room. It seems that under the laws of Venus there was a sort of joint jurisdiction between the queen and the supreme judge.

In all judicial cases the two presided together.

At least, the queen had the right to preside with the judge whenever she chose. It certainly did not strike me as a very wise arrangement, for in case of disagreement how were they to arrive at a decision without a third person to cast a deciding vote?

That, however, was none of our affair, and it was lucky for us that on this occasion the queen had not only chosen to exercise her prerogative, but had bent the law to her authority. I suspect that it usually happened that way whenever her feelings were interested, for a woman will have her way whether she lives on the earth or on Venus.

Owing probably to the fact that the victim of Edmund's pistol was the son of the venerable supreme judge, all of Ala's arguments in extenuation

of the offense had been wasted until, seeing the imminent danger—her love though, perhaps, hardly appreciated by herself—suddenly flamed forth, and she determined to save Edmund at any cost.

#### Our Case a Just One

**T**HE essential justice of our case was so evident to any unprejudiced mind that the sympathy of the majority of the audience had really been with the queen all the time, and to that fact we owed our escape.

The insane jealousy of Ala's unfortunate suitor had greatly complicated the situation, and was to be a source of trouble for us in the future; but his adherents were not numerous enough to threaten serious danger after we had once found refuge in the queen's apartment.

Her authority asserted itself in full force, and, as far as we were concerned, the episode seemed to be closed.

After the excitement about the trial and the scene that followed it had died down, we were assigned to a suite of apartments in the palace, Juba always remaining with us. We were continually on our guard, and all kept a sharp lookout for Ingra, the disappointed suitor, and his emissaries, because we had not the least doubt that he would have spies on our track, and would make away with us if he could. But for a long time we saw nothing of him.

Without our calendar clock we lost track of the time; for here, where it was always daylight, there was nothing to count by. Yet sleep, as we found, was no less necessary on Venus than on the earth. These people spent about as much time in bed as we do, retiring for the purpose into unlighted apartments.

Of course we saw Ala frequently; and as it became gradually easier for us to comprehend one another, we learned many interesting things.

She had succeeded to the throne on the death of her mother, who had been queen before her. Here there were no kings, the succession passing always to women. Her father was also dead, and she had no brothers or sisters.

#### A Question of Inheritance

**I**F she should die without leaving a daughter, the throne would pass to a collateral line. The question of her marriage was therefore of the first importance. Ingra, the pretender to her hand, was of royal blood, and he had the backing of a strong faction. He was Ala's third cousin, and though a young man of great beauty, she had no liking for him.

Ala herself was an extraordinary person, universally admired, not only for her beauty and her kindly nature, but even more for her intellectual gifts. She possessed a great deal of enlightened curiosity, and the expedition toward the mysterious land of night had been both led and planned by her.

As Edmund had surmised, the inhabitants of their side of Venus were not a warlike people. They all belonged to one race and one kingdom. Only a part of the daylight hemisphere was inhabited, a broad, ring-shaped area, with temperate climate,

lying between the land of storms and and ice on the one hand, and the torrid circle on the other.

The torrid circle occupied the central part of the hemisphere, and there the unbroken sunshine created a climate that was absolutely inhibitory to life.

So much it is necessary to premise for an understanding of the events that followed.

As the time passed, we began to become anxious to learn what had been done with our car, and in a minor degree we were interested concerning the automatic rifles, which had been taken away from us at the start. We knew that all of these things had been brought to the capital, but we were ignorant of their location. We were afraid, too, that they might fall into the hands of those who were inimical to us, and be either destroyed or permanently concealed.

As the intimacy between Edmund and Ala increased, and their unconcealed attachment became more pronounced in its expression, the rest of us felt a little anxiety concerning its ultimate bearing upon our fate. We had no idea of staying all our lives on Venus; but if Edmund should decide to stay, what would become of us? At last we determined to question him, and Jack volunteered to be the spokesman.

"See here, Edmund," he began, "this is love's young dream with a vengeance. But you are getting all the best of it. You may become king of the planet for aught I see; but these hours are not too amiable to us, and we rather think it's time to talk about the earth again."

#### Longing for New York

"I think I've had enough of Venus myself. I'd rather like to see old New York once more. Now, what are you going to do about it? How about the car?"

"I have only just learned where it is stored," Edmund replied, "and I was about to speak to you of it. Ala and I have a project, for the carrying out of which the car will be necessary. We'll go and have a look at it; but, first of all, I've got to find some uranium to put it into shape again."

"Well, I hope you'll find your uranium," said Jack; "but what project are you talking about? Are you going to take Ala back to the earth?"

"No," Edmund replied, "or, at least, not now. We've got more exploring to do on Venus. You don't suppose I'm going to quit yet."

Henry, who had never expressed much admiration for what we had seen, fairly groaned.

"Edmund," he said, "if I had a thousand million dollars, I'd give you every cent to take me back home."

He meant it, for I never seen a face so full of misery.

Edmund, however, only smiled, saying:

"Cheer up, Henry; you'll get back, all right, in time. Come—what sort of stuff are you made of? Can't you appreciate the glory of being the first explorers of another world?"

Evidently Henry could not, and just at that moment I doubt if Jack and I could, either. There was nothing for us to do, however, except to await Edmund's movements. We couldn't have navigated the car homeward, if we had had it.

A short time afterward, accompanied by Ala, two of her ladies in waiting, and half a dozen stout fellows belonging to our guard, we went to visit the car. It was away up in the aerial tower where we had first landed, but I was disappointed to see nothing of the rifles.

"I hope they haven't fallen into Ingra's hands," I said to Edmund.

"If they have," he replied, "they'll probably prove more dangerous to him than to anybody else. Even if he learned how to use them, the extra ammunition is all in the car."

Nevertheless, I knew that the rifles carried ten shots each in their chambers; and I didn't like their disappearance, more particularly after learning that Ala was ignorant of their whereabouts.

#### Plans for Fixing the Car

After thoroughly examining the car, Edmund repeated that he needed only uranium to put the apparatus in first-rate condition. He explained that the jar against the ice precipice, or the violent fall, had produced an "atomic readjustment," which could only be remedied with the aid of fresh material. Of course I knew no more than the man in the moon what he meant; but I was satisfied with the assurance that the thing could be fixed.

Here a new difficulty rose at once. Ala evidently knew nothing about uranium, and had no idea what it was that Edmund wanted. He succeeded only in making her comprehend that he must search for something in the ground.

"Uranium," he said to us, "is sometimes found around silver or lead mines. The first thing is to discover where they do their mining. If we can find uranium, all right. If we can't, we may as well say good-by to the earth, for we'll have to leave our bones on Venus."

#### CHAPTER VIII

##### At the Mercy of a Fearful Enemy

EDMUND had no great difficulty in making Ala comprehend that we wished to visit the places where they got their metals.

Accordingly, not long afterward, we started in an airship—escorted by four or five consorts—for an exploration of the mines. Ala, as usual, had her two favorite maids with her.

We went a long distance from the capital, up near the mountains. They value gold on Venus as much as we do on the earth, and, naturally, they were eager first to show us their gold-mines. The sight was amazing.

Talk of California and Australia, of Peru and South Africa! All of them put together never saw so much gold as we beheld in one of those mines! I perceived that Henry's mouth fairly watered at the sight.

Edmund was intent only on his search, and it was delightful to see the tender interest in Ala's eyes as she followed him. But he could find no trace of what he wanted.

"Plague take it!" he exclaimed. "If I had only carried on my experiments a little longer before setting out, I might have been able to get the power I want from any of the metals. But now nothing but uranium will do."

We went from mine to mine, with the same result. Finally we reached the silver mines, and Edmund's hopes brightened. At last he uttered a great shout of joy.

"Here's pitchblende," he said. "All I want now is an electric furnace."

I felt a load fall from my shoulders, because we had already learned that chemistry was no unknown science here. There must be laboratories at the capital, if not in the neighborhood of the mines themselves. This latter conjecture proved to be correct, and the fact saved us a great deal of trouble; otherwise we should have been forced to transport tons of the pitchblende to the capital in order to extract uranium from it.

But there was another result which we did not anticipate—it gave our enemies an opportunity to plot our destruction.

Close by the mines there was a laboratory provided with an excellent electric furnace. When Edmund saw it he expressed his surprise that chemists so able and enterprising had not yet discovered the property of radio-activity possessed by uranium and its compounds. But they knew nothing about it, and we did; and that gave us a great advantage.

#### A Region of Wonderful Beauty

EDMUND set to work at once, Ala's authority placing everything that he desired in his hands. He shut everybody out of the laboratory except Juba, whom he found useful in various ways. As for us, he said, laughing, that we knew just enough to be stupid and useless.

I think we must have been more than a week there when a terrible thing occurred.

We were accustomed to take our recreation by long walks amid the delightful scenery in the neighborhood of the mines. Although we were among the foot-hills, the elevation was not very great, and the temperature was most agreeable. Nature was at her best. The slopes and valley-bottoms were clothed with vegetation of tropical luxuriance and beauty.

Never have I seen such trees! I did not recognize a single variety known to me at home, and yet they were in no sense grotesque. Many of them were more graceful in form and foliage than any species of palm; others were as massive as oaks; and some as tall and stately as Sequoias. Festoons of flowering vines hung everywhere—and the flowers!

One could never have believed it possible for such hues, such shapes, and such perfumes to exist together outside of a hothouse. To walk through these scenes was like a stroll through paradise.

In one of our walks, Edmund being with us, and Ala and her maids also, we ascended an eminence overlooking the charming valley of a little stream, two or three miles from the mines. There we sat down, at the foot of a lofty tree, to enjoy the view. The air was deliciously soothing; and in a little while Edmund, tired by his long exertions—for he had been at work without rest for forty-eight hours—fell asleep, with his head on a flowery bank, and Ala sitting beside him.

Suddenly a shadow, deeper than that of the foliage, fell around us, and a large airplane swiftly descended in front of the bank.

In an instant twenty men had leaped from it and seized Edmund, Jack, Henry, and myself.

Edmund was dazed with sleep, and the rest of us were paralyzed with surprise, so that—before any effectual resistance could be offered—we found ourselves on the airplane and rapidly ascending through the air. Ala had sprung to her feet and was gesticulating wildly, her maids were overcome with terror, and Juba, who had not been touched by the abductors, remained seated on the ground, apparently dumfounded, and without an idea in his shaggy head.

None of them could have done anything. We rose so rapidly, flying toward the mountains, that in ten minutes even the tree under which we had sat was lost to sight.

#### Prisoners Again

I glanced about among our captors, expecting to see Ingra. He was not visible; but a few minutes later he appeared, with a derisive smile on his face. Evidently, he had kept out of sight in order not to confront Ala.

Oh! the detestation with which I beheld him! If it had been in my power, I would have ground him to powder! My look, I know, expressed my fury; but he stared at me with that maddening grin of successful cunning which turns an intelligent and handsome face, when it screens a wicked heart, into the cruellest devil's image.

He gloated over Edmund, also; but Edmund never even looked at him. It was the second time that we had been taken like foolish mice in a trap, and I raged at the thought.

Edmund was perfectly cool. As for Jack, his face showed that he felt as I did; but he said nothing, and Henry, who at best seldom spoke, was as silent and as pale as a ghost.

We were allowed to stand, though our arms were bound behind us, and even to walk about the deck. The thought flashed upon me that Ingra would be delighted if we should jump overboard, for that would save him the trouble of putting an end to us. Several times he strode by, and tried to catch Edmund's eye; but Edmund ignored him as completely, as if he had not existed.

As the great airplane swept on at terrific speed, my thoughts turned back to Ala. What would she do? What could she do? She could not follow—at least, not until after a fatal delay—for she would have to return afoot to the mines, three miles away, before she could find aid.

By that time we would be far out of sight among the mountains, leaving no track in the air. I fairly groaned at the thought of the absolute hopelessness of our situation. But, in thinking that Ala could do nothing for us, I underrated her abilities and the inspiring power of love.

Fortunately, after we had lost sight of the tree, the airplane slowed up and came almost to rest. We circled about for a while, and Ingra consulted with his co-conspirators.

Their gestures indicated that they were debating as to their course. They pointed this way and that, and finally drove the airplane to a great height to reconnoiter ahead. The delay was providential,

## A Pursuer

WHILE we were circling, and while our captors were choosing their course, my eye happened to catch—away off in the sky behind us—a black speck, barely visible. In an instant I was all excitement. I pointed out the object to Edmund.

"For Heaven's sake," he whispered, glancing cautiously round, "don't let these brutes know what we see. Don't seem to notice it. *She is following us.*"

I said nothing to Jack and Henry, who had not seen the object; but I could not withdraw my eyes from it, although I covered and concealed my glances, and tried to seem occupied in looking another way.

Finally Ingra apparently made up his mind, and off we went again. But by this time the speck had enlarged to a distinct black dot in the sky. Manifestly it was overtaking us, and in a little while it had become so plain that the others caught sight of it.

Ingra showed both surprise and anger at the sight. His action was prompt. He issued orders which in half a minute sent us spinning at incredible speed. At the same time he dropped lower, in order that the airplane might be lost against the background of the mountains.

But that black dot followed, and I thanked Heaven as I saw that it did not grow smaller. It even seemed to enlarge.

Presently Edmund, who had now begun to watch it with his pocket binocular, handed the glass to me, saying simply:

"Look!"

I looked, and then handed the glass to Jack and Henry, that they might share the pleasure which that sight gave. We could make out clearly the outlines of an airplane. We believed that we recognized it as the one in which Ala had brought us to the mines.

How its driving-screws did spin. Heaven grant that no accident should befall its machinery! It was a chance for life and love on one side, and for revenge on the other, and the speed was pushed up to the utmost limit.

## Surmises

SUDDENLY a shocking thought crossed my mind. I tried to banish it, for I feared that Ingra might read it and act upon it. Suppose that he should hurl us overboard!

It was within his power to do so. It would have been a quick and simple solution of the matter; and that the idea apparently did not occur to him, I could only ascribe to a protecting hand that guarded us even in this extremity.

On we rushed through the humming air, and still we did not drop the pursuer. Minute by minute the chasing airplane became more distinct against the bright background of the great cloud dome. Suddenly Edmund touched me and called my attention to something ahead.

"There," he said; "there's their hope and our despair."

I looked and saw that in front of us the sky was dark. Great clouds were rolling up, high above the mountains, and the latter were shadowed by them,

We seemed to be approaching a region of twilight. Once within it we should be lost to sight!

"It is the edge of the temperate zone," said Edmund. "Between that zone and the central circle of eternal, unclouded sunshine lies a region of contending air-currents, rains, and storms, not unlike that which we crossed this side of the Crystal Mountains. Having entered it, we shall be as if behind a curtain, and they can work their will with us."

Was it the knowledge of this fact that had restrained Ingra from throwing us overboard? Was he meditating for us a more dreadful fate?

It was indeed a land of shadows that we now entered. Ahead, we were passing the crest of the mountain-range, which was nowhere of any great height, and even in the gloom we could perceive that ahead of us the inclination of the ground was downward.

I glanced eagerly downward to see if Ala's airplane was yet in pursuit. Yes, there it was, a distinct dot on the bright dome behind, the upper part of which was now beginning to be obscured from our view by the roof of inky clouds that spread darkness round us. We could see them very plainly, but could they see us?

I tried to hope that they could, but reason taught me that it must be impossible. Still, they evidently were holding on their course, and there was a gleam of hope in that.

## Ingra's Plotting

BUT even this hope faded when Ingra, with devilish cunning, as soon as we had entered deep into the gloom, abruptly changed our course. He knew well that we were now invisible to our pursuers; but to prevent the bare possibility that they might be able to follow us if we maintained a straight course through the air, he doubled like a hunted fox.

We watched for the effect upon the other airplane. The change of our perspective revealed the fact that they were continuing straight on as before. They had not seen us, then; and even if, as must surely be the case, they anticipated such a ruse as Ingra had practised, how could they baffle him and find our track again? At last the spreading darkness swallowed from sight the arch of illuminated sky behind, and then we were alone in the gloom!

Understand me, this was not the deep night of the other side of the planet. It was more truly what I have already called it, twilight—a dark twilight, and as our eyes became accustomed to it we could see a little.

We had dropped down within a few hundred yards of the ground, which had now become a level expanse, and soon we began to notice that it was covered with small bodies of water, interspersed with masses of trees and bushes. It was, in short, a gigantic dismal swamp or everglade.

I shuddered as the evident design of Ingra burst upon my consciousness. He meant either to throw us in the morass, or to leave us to starve in the midst of these fens. His real design, as you will see in a moment, was even more diabolical.

The airplane gradually approached the ground, just skimming the tops of strange trees, the most

horrible vegetable forms that I have ever seen. At length we settled down upon a comparatively dry space, perhaps a quarter of an acre in extent; and there, without warning, we were seized and pushed off the airplane, which instantly rose circling above us.

#### Burning the Bonds

INGRA'S staring face appeared for a moment, and even in the gloom we could see the devilish glee that overspread it. If our arms had not been bound triumph would have been ended then and there. I saw Edmund straining desperately at his bonds to reach his pistol. But in ten seconds the airplane had risen beyond pistol-shot.

"Quick!" said Edmund. "Hold your hand here."

I turned my back to him, and stretched out my fingers, not knowing yet what he wished.

"Take a match from this box which I have twisted out of my side-pocket," he said; "and while I hold the box scratch it and, for Heaven's sake, hold the flames quick against the bonds around my wrists."

I managed to get hold of the match and, finding with my fingers the box, scratched as best I could. But the match broke. Edmund, with the skill of a prestidigitator, got another match out of the box, and pushed it into my fingers. It failed again.

"It's got to be done!" Edmund cried. "Here, Jack, you try."

Again he succeeded in extracting a match, and Jack backed up in my place. Whether his hands happened to be less tightly bound, or whether he had more skill and nerve, on the second attempt it succeeded.

"Don't lose it," cried Edmund, as the light flashed. "Burn the cord."

Jack tried. The smell of burning flesh arose, but Edmund never winced. In a few seconds the match went out.

"Another," said Edmund, and the same operation was repeated. A dozen separate attempts of this kind had been made, when, with a violent effort, Edmund snapped the charred cord, and was free. His hands and wrists were severely burned, but, paying no attention to them, in a minute he had us all cut loose.

It was a mercy that they had not noticed the flame from the airplane, for if they had, undoubtedly they would have returned, and made an end of us before we could have released our hands. Now, gripping our pistols, we felt less anxiety.

We could no longer see the airplane which had been swallowed up in the darkness, but suddenly a loud splash in the water close by startled us. A moment later this was followed by a second and a third splash. We had dimly caught sight of some long, slender objects, apparently falling from the sky. Instantly Edmund, whose eyes were marvelously quick, sung out:

#### A Monster on Venus

"IT'S the rifles!"

"The rifles?"

"Yes. Ingра had them, and he has thrown them overboard." And at the words Edmund dashed into the shallow water, where the splashing had occur-

red. In a minute he returned, with one of our cruising rifles in his hand!

"Hunt for the others!" he exclaimed, and we ran with him into the water, and actually found the other two sticking in the mud, for the water was not more than a foot deep.

"Heaven be praised!" said Edmund. "This is a piece of luck."

"I should think so," said Jack dryly. "It's positively humorous."

"In Heaven's name," I exclaimed, "why did he throw them overboard? Not for us, surely!"

"Of course not," said Edmund. "It's plain enough. He had taken them, but couldn't find out how to use them. He did not want to carry this evidence of his guilt back with him, and so it occurred to him to get rid of them along with us. No doubt when he cast them out the airplane was away, and high up. He never dreamed that they would fall within our reach.

"But you observe the heavy wind that is blowing overhead. The weapons are light, and the wind carried them our way. If the airplane had not been so high up they never would have reached us."

Dumbfounded, the rest of us said nothing, except Jack, who grumbled:

"Hanged if I don't think this kind of luck is uncanny."

"I cannot be thankful enough for the return of the rifles," said Edmund presently. "We shall have use for them. Without them I doubt if it would ever have been possible for us to pull out of this trap."

"It seems to me," said Jack, "that three pairs of seven-league boots would be more to the purpose just now than three rifles. What are you going to shoot?"

Edmund started to reply, but was interrupted by another noise—not a splash this time, but a heavy, sonorous, sighing sound. In the gloom, surrounded by the repulsive, half-spectral forms of the monstrous vegetation of the swamp, that mysterious sound, which plainly denoted some giant kind of life, fairly made us quake.

"My Heavens!" said Jack, "what can that be?"

"We'll see," replied Edmund calmly, and threw open his pocket-lantern. As the light streamed out there was a sudden rustle close by and an answering gleam, which passed a shaft of light illumination over us. With a united shout of joy we all cried out:

"Ala!"

It was indeed she with her airplane, within a dozen yards of us, but her approach had been concealed by the distorted limbs of the hideous vegetation that towered on three sides of us.

Our shout of astonishment had not ceased to echo when out of the horrible tangle rose, with a swift, sinuous movement, a long, anaconda-like arm, flesh-pink in the electric beam, but covered with dark, spike-edged spiracles.

It curled itself over the edge of the airplane and swiftly drew it downward.

## CHAPTER XIV.

## A Strange Victory

THE airplane tipped as it descended, and, with confused cries, most of its crew tumbled off, some falling into the water, others disappearing in the tangled vegetation. The light went out, but Edmund's lamp continued to burn.

We could see Ala, as the machine sank lower and crashed through the branches, clinging desperately to an upright on the inclined deck.

The awful arm was clasped about the steel-work within a foot of her!

With a terrible cry, Edmund dashed into the matted growths, madly fighting his way through. Jack and I followed, but Henry sank upon the wet ground, helpless through sheer terror.

"That's the fate they intended for us!" Edmund shouted. "But, by Heaven, it shall not come to *her!*"

If we had had far to go, we should never have been able to get through that awful mass. Even in the excitement of the moment I shrank from the hateful touch of those twisted branches, clammy as the skin of serpents.

But Edmund regarded nothing except his purpose. He battled maniacally with the obstacles in his path, leaving an opening for us at his heels. Through it all we hung on to our rifles, feeling that this alone could save us.

I suppose it was not more than two minutes before we emerged into a comparatively open place—and then the sight that met us!

In the midst of the opening, but half visible in the gloom, on huge squat legs, stood such a monster as you have perhaps read of in books on paleontology, but the equal of this one no geologist ever imagined.

I don't know how large its body was, but its gigantic three-cornered head looked as big as a beer-vat, and from the front of the head issued something resembling the trunk of an elephant, but as large as a dozen. The eye on that side of the head which was turned toward us glowed like an ember in the light of Edmund's lamp.

The creature was crushing the airplane, bending its sides like pasteboard with that mighty trunk. For my part, I was paralyzed by the awful spectacle, but Edmund's sharp command brought me to my senses.

"Hold the lamp!"

Mechanically I took it in my hand. Then I saw Edmund aiming his rifle.

*Bang! Bang! Bang!*

Ten times the shots rang out, zipping one on the heels of another, and I knew that the chamber was exhausted.

"Give me your rifle!"—to Jack.

But it was unneeded. At the very first shot I saw the monster's red eye go dull, and I believe that every bullet entered his brain. He was so huge and unwieldy that he couldn't fall like an ordinary animal. He released the wrecked airplane, threw his vast trunk, heaving in agony and, thrashing the branches over his head, sank upon his immense knees, and slowly rolled down in the sedgy mud.

Without a moment's hesitation, Edmund rushed forward, and a minute later I saw him carrying Ala.

## The Monster Is Dead

SHE had fainted, but was uninjured. A little stimulant brought her round, and, lying in his arms, she looked at him, dazed at first, and then with such an expression as I should like just once to encounter in a woman's eyes.

While we were thus engaged, Juba appeared, his white furry body thick with mud, and his huge eyes actually comical in their mingled look of amazement and terror. Presently, half a dozen of the men who had been thrown from the airplane fought their way to us.

"Quick now, boys," said Edmund. "We've got to fix up a shelter."

Still carrying Ala, he led the way to the airplane. Its light steel frame was badly bent in places, but it had settled right side up, and a short inspection showed that it was not a hopeless wreck.

"If the machinery is not seriously injured," said Edmund, "we shall be all right. But we can't get out of this straight away, and I must have a safe and dry place for Ala, while I examine the thing and collect the survivors."

"Just look at that beast," exclaimed Jack, pointing to the huge carcass of the slain monster.

"Better see if there are other live ones round," returned Edmund sharply. "Use your eyes and ears as you never did in your life, while I look at the machinery."

Gently placing Ala in a secure place on the now level deck, Edmund began to explore the mechanism of the airplane. In a few minutes he turned on its powerful electric light, which lit up the strange scenery around us like a full moon.

"You may draw the creatures upon us," I said.

"Yes," Edmund replied, "but it's just as likely to scare them off. In any event, I've got to have plenty of light. Where's Henry?"

"Back there, paralyzed with fear," I replied.

"Go and find him, one of you."

## Once More in the Air

JACK and I looked at one another. Jack made a wry face, and probably I did the same. It manifestly had to be done, however, and, taking the pocket-lamp, we gingerly crept back through the terrible thicket, and found Henry still seated on the ground. He remained speechless as we led him to the airplane and seated him upon it. So perfect a picture of abject fright I had never seen. Yet I pitied him from the bottom of my heart, for Henry had his good qualities.

In the meantime, Edmund pursued his investigations, aided finally by the engineer of the craft and two or three of his assistants, who, guided by the light, had struggled out of the swamp. In perhaps an hour's time the airplane was pronounced in fit condition for flight. No more monster beasts had made their appearance, although three or four times we had heard them moving about at no great distance, and, with beating hearts, had gripped the two rifles that remained loaded.

Jack's good nature was restored, and he couldn't refrain from expressing again his opinion that the way those rifles had come back to us beat all the fish-yarns he had ever heard.

"Now you'd never have dared to invent a story like that," he said to me.

I confessed that I wouldn't, and added that I wouldn't have dared invent anything that had occurred on this expedition.

"You'd better be thankful for what has happened," Edmund interrupted, "and not be railing at Providence when it interferes in your behalf."

When everything was ready, we listened for a while to learn if any survivors yet remained unfound. Finally, hearing nothing, Edmund called out: "All aboard!"

I never learned how many, if any, had been lost.

At any rate, we were a company of fifteen, including Juba, when, at last, we circled up into the air and left that awful place.

Ala, as the nervous shock wore off, resumed her queenly air, but with it there was mingled an expression of fond admiration for Edmund that warmed my heart. If ever a couple were born for one another, I thought they were. Yet they had been born a long way apart!

#### The Return

THE crew of the airplane seemed to know the way well enough, once we were aloft, and after but a momentary hesitation, our course was set, and we began to speed at a great elevation. Finally, we caught sight of the arc of daylight far away, and it gradually rose and spread, until we emerged from under the cap of dark vapors and the region of twilight into the now familiar land of the great seashell-tinted cloud-dome.

Edmund remained for a long time communing with Ala, but at last he approached us.

Henry, meanwhile, had recovered a little equanimity.

"I suppose," Edmund began, "that you would like to know how they found us."

"Upon my word," I said, "I never thought about that in the confusion that we have gone through. But, yes indeed, we should like to know how under heaven they ever managed it."

Thereupon Edmund sat down and told us the story as he had learned it from Ala and the others. It seemed that Juba had finally been our savior, though, of course, it was Ala who had inspired and managed the whole thing.

When they saw us snatched away from under the tree, they instantly comprehended Ingra's plot, and, calling upon the others to follow, Ala ran like a deer for the mines. Juba alone was able to keep up with her, the two handmaidens being left far behind in the race. Fortunately, most of the way was down hill.

"I guess they made those three miles in less than fifteen minutes," said Edmund, smiling with a fond glance at Ala.

Arrived at the mines, Ala instantly ordered her airplane under way, with the best crew she could find at a moment's notice. She knew what to do first.

She had long since lost sight of us, but she had noted the direction of our flight and her first measure was to rise rapidly to a great elevation so as to command a wide prospect, at the same time in order not to lose valuable ground, making toward the mountains.

Ingra's delay in choosing his course, and his oversight in going to a great height, aided our pur-

suers, and they soon caught a glimpse of us, a mere speck in the air, miles and miles away.

Ala immediately ordered top speed. She drove the machine at such a rate that, as Edmund made out the story, her engineer protested. But she would listen to nothing.

Faster and faster their driving-fans spun, until they seemed about to whirl themselves off their shafts. They soon had the satisfaction to see that they were gaining, for Ala's airplane was one of the swiftest.

Slowly they drew up on us, until the twilight borders were reached, and then their hopes quickly faded. As we entered under the dark clouds, we were swallowed from sight.

Ala's heart gave way, and finally, in an agony of despair, she sank upon the deck. She knew too well the horrible fate that Ingra had prepared for his rival.

#### Juba to the Rescue

THEN it was that Juba unexpectedly came to the rescue. Possessing already the basis of the wordless language that was employed by them, he had little difficulty in learning how to communicate with Ala's people, and seeing her despair, and comprehending the purpose of the chase, he now respectfully approached her and made her understand that he could *see in the dark*. He had lived all his life in a land of shadow and of night, and his eyes, while half blinded in the light, were exactly suited for the conditions that now confronted them.

He proved the truth of his assertion, or tried to, by pointing out the escaping craft, averring that it was perfectly visible to him. Ala was filled with joy at this happy turn of events. Immediately she recovered her self-command, and gave orders to all her crew that Juba's directions should be implicitly followed.

With the shades removed from his great eyes, Juba took his place on the prow of the airplane and guided its course. Without the slightest delay, without abating their fearful speed, they plunged into the gloom, straight on our track.

When Ingra made his sudden change, of course Juba saw the manoeuvre and turned it against its inventor, for now Ingra himself could not see his pursuer, and could not know that he was still followed. The nose of the bloodhound is not more certain in the chase than were Juba's eyes in that terrible flight through the darkness.

They continued to gain upon us so rapidly that they were close at hand when Ingra rose from the swamp after pitching us out. Following Juba's indications, the pilot was about to dash at the escaping airplane, when Ala, divining what had been done, checked him, and ordered him to seek the spot where she was sure that we had been left, by Ingra's orders, to be devoured by the monsters of the morass.

But even Juba's eyes could not locate us, hidden as we were on the dark, swampy ground and amid the twisted vegetation. Having commanded the pilot to descend near the ground, Ala was beginning a careful search, which even yet might have failed, when the sudden flashing out of Edmund's lamp told them where we were.

I need not tell you how breathlessly we listened

to this narration. When it was finished we all looked at Juba with a kindly interest, such as we had never before felt toward him. But Jack's interest in, and gratitude toward him, ran into enthusiasm.

He sprang to his feet, danced upon the deck, to the amazement of our friends, and, approaching Juba, slapped him upon the back, with a joyous laugh, exclaiming:

"Good old boy! Come down to New York and I'll take care of you!"

## CHAPTER XV.

### Wild Eden

**H**E stopped at the mines, and Edmund, as coolly as if nothing had happened, resumed his work in the laboratory.

What had passed between him and Ala, in regard to Ingra and his co-conspirators, I do not know, but I remember that sometimes there was a grim look on Edmund's face when he sat silently meditating, which I interpreted as an ill omen for his enemies.

Several times an airplane was despatched to the capital, apparently on a secret mission. In an incredibly short time sufficient uranium had been accumulated to answer Edmund's needs, and then with the precious stuff on board, we set out on our return.

On reaching the capital, we had a magnificent reception.

The news of what had occurred had been noised abroad, and Ala's friends were out in force to welcome her. If Ingra's partisans were on hand, they took good care not to let themselves be known.

Ala's popularity had immensely increased, because her romance took the hearts of her people by storm. Edmund's stock rose, and ours along with it.

I shall attempt no description of the reception, only saying that it was similar in character to the one which had attended our first arrival, though far more gorgeous in details.

Edmund was too much absorbed in his work to waste time on these things. He immediately sought the car, and devoted himself to its preparation. Four or five days may have elapsed before he announced the completion of his work. Then he called us together.

"I believe the car to be all right now," he said, "and I am going to make a trial trip. You can all go, and I'll take Ala and one of her maids along, leaving Juba here."

### Exploring Venus

**I** SHALL not soon forget that trip!

At the start we were delighted. It seemed like home to be once more inside the familiar car, and to watch Edmund manipulating the revolving knobs that governed the mysterious force. Henry begged Edmund to take us back to the earth at once, but Edmund refused.

"I'm not yet done with Venus," he said. "There's lots of things here that we haven't seen. Now that we've got the car in shape, we can make rapid work of it."

Jack's spirits had risen to a high pitch with the

knowledge that the means of return were once more in our hands, and he joined in with Edmund.

"Of course, we won't go back yet," he said. "I want to see Edmund crowned king of the planet first."

An enormous crowd assembled to see us off. I believe that the capital was more populous than London, and everybody in it was on the alert when we launched the car from one of the upper stories of the great tower. The air was crowded with gay airplanes and air-ships, banners and streamers were displayed on all sides, and the atmosphere bloomed with undulating colors.

The noise was extraordinary for Venus, and a universal cry of astonishment burst forth when the car, without visible machinery, swiftly rose into the air and circled over the city. The airplanes chased us like children following a street organ, but soon Edmund touched a knob, and we shot up, rocket-like, leaving them all behind and below.

Higher and higher we rose, until the vast roof of the cloud-dome was reached. From that immense elevation the whole breadth of the inhabited zone appeared spread below us, bordered with luminous clouds along both of its edges. The metropolis looked like a giant flower-bed, and dotted over the country were smaller cities, while innumerable air-planes sailed about far beneath us, like flocks of brilliant-plumaged birds.

### Ala at the Helm

**I** STUDIED Ala's face to note the effect upon her.

She showed some surprise; but more, her countenance denoted admiration of Edmund, and her enthusiasm was fairly girlish. Yet her quick intelligence manifested itself also, and she attended with keen interest when he showed her how the controlling knobs were managed.

He even permitted her to turn some of the controllers, and her delight knew no bounds when she found how easily, under his guidance, she could direct our course. Now we shot along under the dome like a meteor, now we darted downward, and then we ventured a little way up into the clouds.

I was surprised though, of course, I ought not to have been, to find that when we entered the cloud-dome the darkness around us was hardly noticeable. The clouds, although close-packed, were filtered through with sunshine from above, so that we seemed to be immersed in a rose-pink mist.

Ala exhibited no fear whatever, and, at length, Edmund proposed that we should rise up through the dome into outer space.

We did this rapidly, so that in a few minutes we emerged on the upper side, and Venus was changed into a vast white globe, brilliant with sunlight, but as soft in appearance as a ball of wool. The world below was completely hidden.

Only one thing astonished Ala—the sun. It was too blindingly brilliant to look upon, but frequently I saw her turn in its direction with an expression that greatly puzzled me. I did not understand it until afterward.

Then now occurred one of those things which are bound to happen whenever two persons as much interested in one another as were Ala and Edmund, are together, and one of them tries to be particularly agreeable to the other.

Apollo, in the old legend, was not guilty of a greater indiscretion, when he allowed Phaeton to take the reins of the horses of the sun, than was Edmund, when Ala, a little vain of what she had learned, asked to be allowed to guide the car.

He foolishly consented, and the consequences were prompt in declaring themselves.

#### Trouble with the Car

**E**DMUND had worked up to a pretty lively clip, and we may have been making ten miles a minute, when Ala's desire to try her hand alone was gratified. She had hardly grasped one of the knobs when my consciousness went off skylarking and, as I quickly found out, the same thing happened to everyone in the car. You will easily imagine what had occurred—inadvertently Ala had brought us to the right-about, which flung us off our feet with such violence that we were knocked senseless.

When I came to myself and got on my legs, Edmund had already recovered, and was working desperately at the controllers. I knew from the motion that he was trying to stop us. The car shook as if it would fall to pieces, jolt following jolt, like an express train under emergency brakes. Blood was running down his face, and, with a quick motion, he wiped it out of his eyes, without ever ceasing his labor at the knobs. Seeing, more by instinct than by looking, that I had recovered, he cried out:

"For heaven's sake, Albert, look to Ala!"

She lay senseless near the center of the car, while Jack and Henry had been pitched into a corner, and the maid lay beside a bench.

I lifted Ala, and, after being jerked from my feet two or three times, succeeded in placing her on one of the benches against the wall. I could see Edmund's anxious glances over his shoulder, but he could not quit his place, nor for an instant remit his exertions.

#### Beautiful Ala

**N**EVER had the beauty of this queen of Venus seemed so wonderful as when I thus bore her in my arms. I even imagined that Edmund must feel a pang of jealousy. Very gently I placed her upon the cushioned bench, and seeing no blood on her white face and arms, I believed that she had suffered no injury beyond a shock.

Soon she opened her eyes and, as they fell upon Edmund, I realized that I and my exertions in her behalf were already forgotten. She immediately strove to rise, pushing me away, but Edmund, seeing the movement, signaled her to remain where she was.

Docilely she obeyed him, and then for the first time she smiled at me—only to express her gratitude, but it sent the blood into my face.

In the meantime, Jack, Henry, and the maid had recovered. None of them was seriously injured, and they scrambled to their feet. The car by this time had ceased its eccentric movements, and a moment later it came to rest.

I felt that it had touched ground—but where? Edmund instantly ran to Ala's side and began to caress her hands.

"Thank heaven!" he said aloud, and if she did not

understand his words she knew well his meaning.

When we began to bind up the cut on his head I felt like an intruder, and hurried to one of the windows. The first glance outside filled me with astonishment—and well it might!

One would have said that we had descended into the midst of a garden of gorgeous orchids. Strange flowers of the most exquisite beauty, and most extraordinary shapes, hung all about us, some of them brushing against the window. I called Jack and Henry to look at them, and while we stood there gazing, no one speaking a word, a mass of foliage parted, and there emerged into view a bird so dazzlingly splendid in color that we all three muttered a simultaneous "Oh!"

Our exclamation attracted the attention of Ala and Edmund, who at once came to the window. No sooner had she looked out than Ala joyfully clasped her hands and immediately addressed herself to make Edmund understand her thoughts.

After a minute or two, he said to us:

#### The Birds of Venus

**W**E have had great luck! In rushing back to the surface of Venus without knowing where we were going, we have landed, in what I make out from Ala, in a kind of wild Eden, famous for the beauty of its flowers and its birds. She proposes that we shall at once alight from the car, in order to enjoy the singular sights and pleasures which this place affords."

We alighted, accordingly, and found ourselves in a perfect wilderness of the most beautiful flowering shrubs and trees. Pushing aside the branches, we emerged into a kind of arbor, as if it had been a park.

All about us the trees and bushes bent under loads of magnificent blossoms which filled the air with delicious fragrance. Birds were everywhere, and they exhibited no fear, simply keeping out of our reach. Their plumage was the most extraordinary I have ever seen, many of them having long, iridescent feathers depending from their wings and tails.

I noticed that Ala frequently turned toward these birds with a look of ineffable pleasure. At first I thought that she was simply admiring their colors and their graceful shapes and movements, but soon I became convinced that she was not merely looking, but *listening*. This excited my astonishment, for none of us could hear a sound, except the occasional rustle of the branches.

"Edmund," I said at last, "I believe that Ala hears something that we do not."

"Of course she does," he replied. "There is music here. These birds are singing, but our ears are not attuned to their melody. You know the peculiarity of this atmosphere with regard to sound. All these people have a horror of loud noises, but their ears detect sounds that lie far beyond the range of vibrations with which ours are affected."

"There is another thing," he added a moment later, "which may surprise you, but I am certain that it exists. *There is a direct relation between color and sound here.* The light waves in certain combinations produce sound-waves."

## The Harmony of Colors

"I can only explain what I mean by reference to the telephone. You know how, by a telephone, sounds are first transformed into electric vibrations and afterward reshaped into sonorous waves. You know also that we have used a ray of light to send telephonic messages, taking advantage of the sensitiveness of certain substances and their power of varying in electric resistance in accord with the intensity of the light that strikes them. Thus, with a telephone at each end, we can make a beam of light reproduce a human voice.

"What we have done, awkwardly and partially, by the aid of imperfect mechanical contrivances, Nature has accomplished here in a perfect way, by means of the peculiar composition of the air and some special construction of the auditory apparatus. It is all in line with the strange power of mental communication which these people possess.

"Light and sound, color and music, are linked for them in a manner that we cannot comprehend. Their esthetic enjoyment must be marvelously in advance of ours.

"It is plain to me now that the music of color which we saw at the palace was something far more complete and wonderful than we then imagined. Together with the pleasure which they derive from the harmonic combinations of shifting hues, they experience at the same time the delight that comes from sounds which are associated with and awakened by those colors, but are utterly inaudible to us.

"I believe that all of their senses are more completely and delicately developed than ours, and that even the perfume of these flowers is more delightful to Ala than to us."

"By Jove, Edmund," cried Jack, who had been listening with amazement, "it is indeed a divine world to which you have brought us! But I wish you would find a way to open up these delights to the rest of us. It's rather disappointing to be plunged into the midst of such things without being able to enjoy them."

His words thrilled me, for I knew that he never spoke thus without having a definite meaning behind.

"But see here," Jack continued. "I don't quite get hold of this thing. These people talk, you know. Then why don't they sing, and why don't they get their music the way we do?"

"Because," was the reply, "as I have just explained to you, they have a far higher and more delicate means of producing and receiving the harmonics of sound. They talk occasionally, it is true, just as you see that these birds utter low sounds from time to time, but speech with them has not been developed as with us, since they have not our need of it."

"I am rather surprised to find that they talk at all. I shouldn't wonder if their spoken language were simply a reflex of their written or printed language."

"Writing and printing!" I exclaimed. "Do you think that there are such things here?"

## The Libraries on the Planet

"I HAVEN'T a doubt of it," Edmund replied. "So intellectual a people must have a history and a literature. But the order of development has been exactly the reverse of that with us. They have first invented their signs for recording thought, and then a simple spoken language has originated from those signs.

"As to their speaking, that is a thing inevitable. Every sentient being utters sounds. It is a necessary result of the experiencing of emotion, and I don't believe that there is anywhere in the universe a race of beings more delicately organized, in our emotional sense, than these inhabitants of Venus."

Inasmuch as I intend to publish a book dealing with the scientific aspect of life on Venus, I shall not burden this story of our adventures with these details, only saying now that it actually turned out as Edmund had conjectured.

We found later that not only were writing and printing known and practised, the characters much resembling that of the Chinese, but at the capital there were immense libraries, containing literary works and histories of Venus for hundreds of generations.

As soon as a comprehension of what Edmund had told us dawned fully upon our minds, we began to note more carefully the conduct of Ala, and we were quickly convinced of the substantial correctness of his inferences.

She sat on a flowery bank under the fragrant drooping branches, and seemed entranced by aerial music which we could not hear.

While we thus lingered, with strange thoughts throwing us into a dreamy mood, I happened to fix my eyes upon an opening in the foliage, directly behind Edmund, who had placed himself at Ala's side.

A curious gleam attracted my attention, and looking sharply, I recognized a pair of eyes intently watching us! Before I could open my lips or make a movement, the face to which the eyes belonged appeared for the fraction of a second and then was withdrawn.

It was the handsome, but evil, countenance of Ingra!

## CHAPTER XVI.

## Turning the Tables

**F**OR a moment I was too startled to be able to speak. Then, knowing the need of caution, I approached Edmund and whispered in his ears:

"We are entrapped. Ingra is behind you."

Edmund did not change countenance. He did not even alter the direction of his eyes.

"Hush," he whispered in return. "Make no sign, but be ready for an emergency. Go to Jack and Henry in an indifferent manner, and tell them what you have seen, but say that I am prepared this time, and that we shall not be caught; tell them to keep perfectly cool."

I did as Edmund directed. Jack showed no fear, but Henry was a little shaken. We stood fast, not knowing what it was best to do. I saw no more of Ingra, but I knew that he was there plotting mis-

chief, and no doubt with enough force at hand to overwhelm us.

I cursed the accident that had thrown us once more into his power. Without question he had come to this remote place to conceal himself while laying his plans, and fate had thrown us into his very lair!

Presently Edmund calmly rose and, taking Ala by the hand, indicated a wish to return to the car. I could see that his eyes furtively surveyed the thicket, although he hardly turned his head. I drew my pistol, and Jack imitated me.

"Stop that!" Edmund whispered sharply. "Keep them within reach, but don't use them except in an emergency, and not then without a sign from me."

Ala understood the situation, and her cheeks paled a little as she followed Edmund, shoving through the underbrush. The car was only four or five rods away, but our path to it was obstructed by the vegetation, and never in my life have I been more nervously apprehensive. I expected every second to feel a rough hand laid upon me. But, whatever Ingra's plans were, he did not attack us during the anxious minutes while we were pushing our way to the car.

#### Captured by Ingra

BUT, just as we were on the point of entering the open door, the blow fell. There was a rush, the branches parted, and Ingra, with more than a dozen followers, fell upon us. The onset was so sudden and fierce that we were swept away from the door, into a small, comparatively open space at the side of the car.

Since we were unable to enter the car, this was the best thing that could have happened, because it offered a little room to act together for defense.

Ingra's aids were all, like himself, tall and powerful, but they carried no weapons as far as I could see; not even bludgeons. Our pistols were in our pockets, and they remained there during the first few minutes of the breathless struggle. There were at last three men upon each of us, and they gave us no time for anything but the quickest kind of sparring.

In this we were all adepts; I have told you of Edmund's skill. Jack was an equally hard hitter, but, owing to his bulk and weight, not so quick. I was only second to Edmund in all-around work, and even Henry was better than the average in sparring, though somewhat lacking in strength.

The efforts of our assailants was to grip and hold us, and ours was to keep them off long enough to enable us to draw our weapons. A keen regret darted through my mind that Edmund had not permitted us to keep the pistols in our hands. Yet they might have been knocked out in the sudden rush before we could have used them.

Even in the midst of the desperate struggle, I saw that Edmund had leveled two of his assailants, and then I was tripped and down I went. What happened to the others during the half minute that I lay prostrate, with my foes atop of me, I do not know; but when I felt myself pulled into a sitting posture, with my arms held tightly behind, a strange sight confronted me.

It was a sight that surprised my captors as much as it did me.

Edmund was lying on the ground, his arms above his head, held by two of his assailants. Ingra was standing by him, leaning forward as if to strike, with a long, glittering knife in his hand—the first weapon I had seen among them—and Ala, who from the commencement of the fray I had not seen, knelt by Edmund's side, with one hand upon his shoulder and the other extended in a gesture of command toward Ingra.

The latter seemed frozen in his tracks.

The knife remained poised, his body was thrown forward on one leg, but his eyes met Ala's and quailed.

#### Pocahontas on Venus

SO dramatic a pose I have never seen on any stage. It was not the pleading look of Pocahontas saving Captain John Smith from his savage enemies that I saw in Ala's face, but the irresistible glance of an imperious will.

Kneeling though she was, her attitude and manner were those of a queen who knows only obedience. The whole force of her character was concentrated in her wonderful eyes. Not only Ingra, but his followers were arrested as if they had been hypnotized.

Not one of them made a motion. Jack and Henry were also prostrate and guarded, for we seemed all to have been overthrown almost at the same moment, but their captor, like mine, remained motionless and staring with amazed looks.

Evidently Ala was speaking, or had spoken, in that voiceless language, and her words, if I may so say, had a potency above all physical strength. But the thought flashed through my head that this spell could not endure.

The passion of Ingra was too fierce, his provocation was too intense, his own rank was too near that of the woman's to permit of his being effectually and permanently restrained by her interference. I expected, each instant, to see him dash aside the arm that Ala interposed, and finish his murderous stroke. The same thought must have occurred to Edmund, and he, at least, never lost the fraction of a second in acting upon the impulses of his mind.

The sudden staying of the unremitting attack had furnished the opportunity so long desired, and, with a motion as quick as thought, Edmund wrencheded his right hand free from the now unnerved assailant, who had held it above his head, and in another instant his pistol was aimed at Ingra's heart.

"Quick!" I yelled, imitating his act. "Your pistols!"

I got mine from my pocket, for the fellows, in their astonishment, had let go of me, and waiting for no further guidance from Edmund, I fired, without particular aim. The shot struck a tall chap at my feet, and down he went. The other who had held me gave back, and I sprang upon my feet.

The whole situation was changed in a twinkling. Jack freed himself as I had done, but without firing, and Henry's assailants retired from the muzzles of our pistols.

It was our turn now.

"Shall we shoot the dogs?" demanded Jack.

"No," Edmund replied. "Simply scare them off. But I'll keep this fellow, now that I have him."

# The PURCHASE of the NORTH POLE

~ By Jules Verne ~

Author of "20,000 Leagues Under the Sea"



J. T. Maston received the hardest voltaic knock that had ever found the mouth of a philosopher. The flash had run along his metal hook, and spun him around like a testotum. The blackboard he struck with his back was hurled down in the corner.

## CHAPTER I

The North Polar Practical Association



ND so, Mr. Maston, you consider that a woman can do nothing for the advance of the mathematical or experimental sciences?"

"To my extreme regret, Mrs. Scorbitt," said J. T. Maston, "I am obliged to say so. That there have been many remarkable female mathematicians, especially in Russia, I willingly admit; but with her cerebral conformation it is not in a woman to become an Archimedes or a Newton."

"Then, Mr. Maston, allow me to protest in the name of my sex—"

"Sex all the more charming, Mrs. Scorbitt, from its never having taken to transcendental studies!"

"According to you, Mr. Maston, if a woman had seen an apple fall she would never have been able to discover the laws of universal gravitation as did the illustrious Englishman at the close of the seventeenth century!"

"In seeing an apple fall, Mrs. Scorbitt, a woman would have only one idea—to eat it, after the example of our mother Eve."

"You deny us all aptitude for the higher speculations—"

"All aptitude? No, Mrs. Scorbitt. But I would ask you to remember that since there have been people on this earth, and women consequently, there has never been discovered a feminine brain to which we owe a discovery in the domain of science analogous to the discoveries of Aristotle, Euclid, Kepler, or Laplace."

"Is that a reason? Is it inevitable that the future should be as the past?"

"Hum! That which has not happened for thousands of years is not likely to happen."

"Then we must resign ourselves to our fate, Mr. Maston. And as we are indeed good—"

"And how good!" interrupted J. T. Maston, with all the amiable gallantry of which a philosopher crammed with  $\pi$  is capable.

Mrs. Scorbitt was quite ready to be convinced. "Well, Mr. Maston," she said, "each to his lot in this world. Remain the extraordinary mathematician that you are. Give yourself entirely to the problems of that immense enterprise to which you and your friends have devoted their lives! I will remain the good woman I ought to be, and assist you with the means."

"For which you will have our eternal gratitude," said J. T. Maston.

Mrs. Scorbitt blushed deliciously, for she felt, if not for philosophers in general, at least for J. T. Maston, a truly strange sympathy. Is not a woman's heart unfathomable?

## An Immense Enterprise

**A**N immense enterprise it was which this wealthy American widow had resolved to support with large sums of money. The object of its promoters was as follows:

The Arctic territories, properly so called, according to the highest geographical authorities, are bounded by the seventy-eighth parallel, and extend over fourteen hundred thousand square miles, while the seas extend over seven hundred thousand.

Within this parallel have intrepid modern discoveries advanced nearly as far as the eighty-fourth degree of latitude, revealing many a coast hidden beyond the lofty chain of icebergs, giving names to capes, promontories, gulfs, and bays of these vast Arctic highlands. But beyond this eighty-fourth parallel is a mystery, the unrealizable desideratum of geographers. No one yet knows if land or sea lies hidden in that space of six degrees, that impassable barrier of Polar ice.

In this year, 189—, the United States Government had unexpectedly proposed to put up to auction the circumpolar regions then remaining undiscovered, having been urged to this extraordinary step by an American society which had been formed to obtain a concession of the apparently useless tract.

Some years before, the Berlin Conference had formulated a special code for the use of Great Powers wishing to appropriate the property of another under pretext of colonization or opening up commercial routes. But this code was not applicable, under the circumstances, as the Polar domain was not inhabited. Nevertheless, as dealing with that which belongs to all, the new society did not propose to "take" but to "acquire."

In the United States

there is no project so audacious for which people cannot be found to guarantee the cost and find the working expenses. This was well seen when a few years before the Gun Club of Baltimore had entered on the task of despatching a projectile to the Moon, in the hope of obtaining direct communication with our satellite. Was it not these enterprising Yankees who had furnished the larger part of the sums required by this interesting attempt? And if it had succeeded, would it not be owing to two members of the said club who had dared to face the risk of an entirely novel experiment?

If a Lesseps were one day to propose to cut a gigantic canal through Europe and Asia, from the shores of the Atlantic to the China Sea; if a well-sinker of genius were to offer to pierce the earth in the hopes of finding and utilizing the beds of silicates supposed to be there in a fluid state; if an enterprising electrician proposed to combine the currents disseminated over the surface of the globe so as to form an inexhaustible source of heat and light;

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*MANY people are continually amusing themselves by pointing out the advantages we would have on earth if our planet were not inclined on its axis 23½ degrees. This inclination gives us our seasons. If there were no such inclination, there would be no seasons. Under the equator we would have perpetual summer. About the Tropic of Cancer we would have moderate weather all year around, and it would even be comfortable at the North and South Poles. We would have exactly twelve hours of daylight and twelve hours of night at every point on the globe.*

*Is it possible by any human agency to right the axis of the earth to accomplish this? In this story the versatile Jules Verne tells us how such an attempt was made and what happened. It is a most exciting as well as interesting story, a classic in all respects.*

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two members of the said club who had dared to face the risk of an entirely novel experiment?

If a Lesseps were one day to propose to cut a gigantic canal through Europe and Asia, from the shores of the Atlantic to the China Sea; if a well-sinker of genius were to offer to pierce the earth in the hopes of finding and utilizing the beds of silicates supposed to be there in a fluid state; if an enterprising electrician proposed to combine the currents disseminated over the surface of the globe so as to form an inexhaustible source of heat and light;

if a daring engineer were to have the idea of storing in vast receptacles the excess of summer temperature, in order to transfer it to the frozen regions in the winter; if a hydraulic specialist were to propose to utilize the force of the tide for the production of heat or power at will; if companies were to be formed to carry out a hundred projects of this kind—it is the Americans who would be found at the head of the subscribers, and rivers of dollars would flow into the pockets of the projectors, as the great rivers of North America flow into—and are lost in—the ocean.

It was only natural that public opinion should be much exercised at the announcement that the Arctic regions were to be sold to the highest bidder, particularly as no public subscription had been opened with a view to the purchase, for "all the capital had been subscribed in advance," and, "it was left for Time to show how it was proposed to utilize the territory when it had become the property of the purchaser!"

Utilize the Arctic regions! In truth such an idea could only have originated in the brain of a madman!

But nevertheless nothing could be more serious than the scheme.

#### A Curious Advertisement

**I**N fact, a communication had been sent to many of the journals of both continents, concluding with a demand for immediate inquiry on the part of those interested. It was the *New York Herald* that first published this curious farra-go, and the innumerable patrons of Gordon Bennett read, on the morning of the 7th of November, the following advertisement, which rapidly spread through the scientific and industrial world, and became appreciated in very different ways:

#### "NOTICE TO THE INHABITANTS OF THE TERRESTRIAL GLOBE

"The regions of the North Pole situated within the eighty-fourth degree of north latitude have not yet been utilized, for the very good reason that they have not yet been discovered.

"The furthest points attained by the navigators of different nations are as follows: 82° 45', said to have been reached by the Englishman, Perry, in July, 1847, in long. 28° E. north of Spitzbergen; 83° 20' 28", said to have been reached by Markham in the English expedition of Sir John Nares, in May, 1876, in long. W. north of Grinnell Land; 83° 35', said to have been reached by Lockwood and Brainard in the American expedition of Lieutenant Greely, in May, 1882, in long. 42° W. in the north of Nares' Land.

"It can thus be considered that the region extending from the eighty-fourth parallel to the Pole is still undivided among the different States of the Globe. It is, therefore, excellently adapted for annexation as a private estate after formal purchase in public auction.

"The property belongs to nobody by right of occupation, and the Government of the United States of America, having been applied to in the matter, have undertaken to name an official auctioneer for the purpose of its disposal.

"A company has been formed at Baltimore, under the title of the North Polar Practical Association, which proposes to acquire the region by purchase, and thus obtain an indefeasible title to all the continents, islands, islets, rocks, seas, lakes, rivers, and watercourses whatsoever of which this Arctic territory is composed, although these may be now covered with ice, which ice may in summertime disappear.

"It is understood that this right will be perpetual and indefeasible, even in the event of modification—in any way whatsoever—of the geographical or meteorological conditions of the globe.

"The project having herewith been brought to the knowledge of the people of the two worlds, representatives of all nations will be admitted to take part in the bidding, and the property will be adjudged to the highest bidder.

"The sale will take place on the 3rd of December of the present year in the Auction Mart at Baltimore, Maryland, United States of America.

"For further particulars apply to William S. Foster, provisional agent of the North Polar Practical Association, 93 High Street, Baltimore."

It may be that this communication will be considered as a madman's freak; but at any rate it must be admitted that in its clearness and frankness it left nothing to be desired. The serious part of it was that the Federal Government had undertaken to treat a sale by auction as a valid concession of these undiscovered territories.

Opinions on the matter were many. Some readers saw in it only one of those prodigious outbursts of American humbug, which would exceed the limits of pufism if the depths of human credulity were not unfathomable. Others thought the proposition should be seriously entertained. And these laid stress on the fact that the new company had not appealed to the public for funds. It was with their own money that they sought to acquire the northern regions. They did not seek to drain the dollars and bank-notes of the simple into their coffers. No! All they asked was to pay with their own money for their circumpolar property! This was indeed extraordinary.

To those people who were fond of figures it seemed that all the said company had to do was to buy the right of the first occupant, but that was difficult, as access to the Pole appeared to be forbidden to man, and the new company would necessarily act with prudence, for too many legal precautions could hardly be taken.

It was noticed that the document contained a clause providing for future contingencies. This clause gave rise to much contradictory interpretation, for its precise meaning escaped the most subtle minds. It stipulated that the right would be perpetual, even in the event of modification in any way whatsoever of the geographical or meteorological conditions of the globe. What was the meaning of this clause? What contingency did it provide for? How could the earth ever undergo a modification affecting its geography or meteorology, especially in the territories in question?

"Evidently," said the knowing ones, "there is something in this!"

Explanations there were many to exercise the ingenuity of some and the curiosity of others.

## Newspaper Comment

**T**HE *Philadelphia Ledger* made the following suggestion: "The future acquirers of the Arctic regions have doubtless ascertained by calculation that the nucleus of a comet will shortly strike the earth in such a manner that the shock will produce the geographical and meteorological changes for which the clause provides."

This sounded scientific, but it threw no light on the matter. The idea of a shock from such a comet did not commend itself to the intelligent. It seemed inadmissible that the concessionaries should have prepared for so hypothetical an eventuality.

"Perhaps," said the *New Orleans Delta*, "the new company imagine that the precession of the equinoxes will produce the modification favorable to the utilization of their new property."

"And why not," asked the *Hamburger Correspondent*, "if the movement modifies the parallelism of the axis of our spheroid?"

"In fact," said the Paris *Revue Scientifique*, "did not Adhemar say, in his book on the revolutions of the sea, that the precession of the equinoxes, combined with the secular movement of the major axis of the terrestrial orbit, would be of a nature to bring about, after a long period, a modification in the mean temperature of the different parts of the Earth, and in the quantity of ice accumulated at the Poles?"

"That is not certain," said the *Edinburgh Guardian*, "and even if it were so, would it not require a lapse of twelve thousand years for Vega to become our pole-star, in accordance with the said phenomenon, and for the Arctic regions to undergo a change in climate?"

"Well," said the *Copenhagen Dagblad*, "in twelve thousand years it would be time enough to subscribe the money. Meanwhile we do not intend to risk a krone."

But although the *Revue Scientifique* might be right with regard to Adhemar, it was probable that the North Polar Practical Association had never reckoned on a modification due to the precession of the equinoxes. And no one managed to discover the meaning of the clause, or the cosmical change for which it provided.

To ascertain what it meant application might perhaps be made to the directorate of the new company? Why not apply to its chairman? But the chairman was unknown! Unmentioned, too, were the secretary and directors. There was nothing to show from whom the advertisement emanated. It had been brought to the office of the *New York Herald* by a certain William S. Forster, of Baltimore, a worthy agent for codfish, acting for Ardrinell and Co., of Newfoundland, and evidently a man of straw. He was as mute on the subject as the fish consigned to his care, and the cleverest of reporters and interviewers could get nothing out of him.

But if the promoters of this industrial enterprise persisted in keeping their identity a mystery, their intentions were indicated clearly enough.

They intended to acquire the freehold of that portion of the Arctic regions bounded by the eighty-fourth parallel of latitude, with the North Pole as the central point.

Nothing was more certain than that among modern discoverers only Perry, Markham, Lockwood and Brainard had penetrated within a degree of this parallel. Other navigators of the Arctic seas had all halted far below it. Payer, in 1874, had stopped at 82° 15', to the north of Franz Joseph Land and Nova Zembla; De Long, in the *Jeannette* expedition in 1879, had stopped at 78° 45', in the neighborhood of the islands which bear his name. Others by way of New Siberia and Greenland, in the latitude of Cape Bismark, had not advanced beyond the 76th, 77th, and 79th parallels; so that by leaving a space of twenty-five minutes between Lockwood and Brainard's 83° 35' and the 84° mentioned in the prospectus, the North Polar Practical Association would not encroach on prior discoveries. Its project affected an absolutely virgin soil, untrodden by human foot.

The area of the portion of the globe within this eighty-fourth parallel is tolerably large.

From 84° to 90° there are six degrees, which, at sixty miles each, give a radius of 360 miles and a diameter of 720 miles. The circumference is thus 2216 miles, and the area, in round numbers, 407,000 square miles. This is nearly a tenth of the whole of Europe—a good-sized estate!

## International Questions Are Raised

**T**HE advertisement, it will have been noticed assumed the principle that regions not known geographically and belonging to nobody in particular belonged to the world at large. That the majority of the Powers would admit this contention was supposable, but it was possible that States bordering on these Arctic regions, or considering the regions as the prolongation of their dominions toward the north, might claim a right of possession. And their pretensions would be all the more justified by the discoveries that had been made having been chiefly due to these regions; and of course the Federal Government, as nominators of the auctioneer, would give these Powers an opportunity of claiming compensation, and satisfy the claim with the money realized by the sale. At the same time, as the partisans of the North Polar Practical Association continually insisted, the property was uninhabited, and as no one occupied it, no one could oppose its being put up to auction.

The bordering States with rights not to be disregarded were six in number—Great Britain, the United States, Denmark, Sweden and Norway, Holland, and Russia. But there were other countries that might put in a claim on the ground of discoveries made by their navigators.

France might, as usual, have intervened on account of a few of her children having taken part in occasional expeditions. There was the gallant Bellot, who died in 1853 near Beechey Island, during the voyage of the *Phoenix*, sent in search of Sir John Franklin. There was Dr. Octave Pavy, who died in 1884 at Cape Sabine, during the stay of the Greely expedition at Fort Conger. And there was the expedition in 1838-39, which took to the Spitzbergen Seas, Charles Martins and Marmier and Bravais, and their bold companions. But France did not propose to meddle in the enterprise, which was more industrial than scientific; and, at the

outset, she abandoned any chance she might have of a slice of the Polar cake.

It was the same with Germany. She could point to the Spitzbergen expedition of Frederick Martens, and to the expeditions, in 1869-70, of the *Germania* and *Hansa*, under Koldewey and Hegeman, which reached Cape Bismarck on the Greenland coast. But notwithstanding these brilliant discoveries she decided to make no increase to the Germanic empire by means of a slice from the Pole.

So it was with Austria-Hungary, which, however, had her claims on Franz Joseph Land to the northward of Siberia.

As Italy had no right of intervention she did not intervene—which is not quite so obvious as it may appear.

The same happened with regard to the Samoyeds of Siberia, the Eskimos who are scattered along the northern regions of America, the natives of Greenland, of Labrador, of the Baffin Parry Archipelago, of the Aleutian Islands between Asia and America, and of Russian Alaska, which became American in 1867. But these people—the undisputed aborigines of the northern regions—had no voice in the matter. How could such poor folks manage to make a bid at the auction promoted by the North Polar Practical Association? And if they outbid the rest, how could they pay? In shellfish, or walrus teeth, or seal oil? But surely they had some claim on this territory? Strange to say, they were not even consulted in the matter!

Such is the way of the world!

## CHAPTER II

### To Syndicate or Not to Syndicate

**I**F the new company "acquired" the Arctic regions, these regions would, owing to the company's nationality, become for all practical purposes a part of the United States. What would the first inhabitant say? Would the other Powers permit it?

The Swedes and Norwegians were the owners of the North Cape, situated within the seventieth parallel, and made no secret that they considered they had rights extending beyond Spitzbergen up to the Pole itself. Had not Kheilhau, the Norwegian, and Nordenstiold, the celebrated Swede, contributed much to geographical progress in those regions? Undoubtedly.

Denmark was already master of Iceland and the Faroe Isles, besides the colonies in the Arctic regions at Disco, in Davis's Straits; at Holsteinborg, Proven, Godhaven, and Upernivik, in Baffin Sea; and on the western coast of Greenland. Besides, had not Behring, a Dane in the Russian service, passed through in 1728 the straits now bearing his name? And had he not thirteen years afterward, died on the island also named after him? And before him, in 1619, had not Jon Munk explored the eastern coast of Greenland, and discovered many points up to then totally unknown? Was not Denmark to have a voice in the matter?

There was Holland, too. Had not Barents and Heemskerk visited Spitzbergen and Nova Zembla at the close of the sixteenth century? Was it not one of her children, Jan Mayen, whose audacious voyage in 1611 gave her possession of the island named

after him situated within the seventy-first parallel?

### A Conference of the Powers

**A**ND how about Russia? Had not Behring been under the orders of Alexis Tschirikof? Had not Paulutski, in 1751, sailed into the Arctic seas? Had not Martin Spanberg and William Walton adventured in these unknown regions in 1739, and done notable exploring work in the straits between Asia and America? Had not Russia her Siberian territories, extending over a hundred and twenty degrees to the limits of Kamtchatka along the Asiatic littoral, peopled by Samoyeds, Yakuts, Tchouktchis, and others, and bordering nearly half of the Arctic Ocean? Was there not on the seventy-fifth parallel, at less than nine hundred miles from the Pole, the Liakhov Archipelago, discovered at the beginning of the eighteenth century?

And how about the United Kingdom, which possessed in Canada a territory larger than the whole of the United States, and whose navigators held the first place in the history of the frozen north? Had not the British a right to be heard in the matter?

But, not unnaturally, the British Government considered that they had quite enough to do without troubling themselves about an advertisement in the *New York Herald*. The Foreign Office did not consider the consignee of codfish even worthy of a pigeon-hole; and the Colonial Office seemed quite ignorant of his existence until the Secretary's attention was called to the subject, when the official reply was given that the matter was one of purely local interest, in which her Majesty's Government had no intention of concerning themselves.

In Canada, however, some stir was made, particularly among the French; and at Quebec a syndicate was formed for the purpose of competing with the company at Baltimore. The other countries interested followed the Canadian lead. Although the Governments haughtily ignored the audacious proposition, speculative individuals were found in Holland, Scandinavia, Denmark, and Russia to venture sufficient funds for preliminary expenses with a view to acquire imaginary rights that might prove profitably transferable.

Three weeks before the date fixed for the sale the representatives of the various syndicates arrived in the United States.

The only representative of the American company was the William S. Forster whose name figured in the advertisement of the 7th of November.

Holland sent Jacques Jansen, a councillor of the Dutch East Indies, 53 years of age, squat, broad, and protuberant, with short arms and little bow legs, aluminum spectacles, face round and red, hair in a mop, and grizzly whiskers—a solid man, not a little incredulous on the subject of an enterprise whose practical consequences he did not quite see.

The Danish syndicate sent Erik Baldenak, an ex-sub-governor of the Greenland colonies, a man of middle height, somewhat unequal about the shoulders, with perceptible corporation, a large head, and eyes so short-sighted that everything he read he almost touched with his nose. His instructions were to treat as beyond argument the rights of his country, which was the legitimate proprietor of the Polar regions.

The Swedes and Norwegians sent Jan Harold, pro-

fessor of cosmography at Christiania, who had been one of the warmest partisans of the Nordenskiold expedition, a true type of the Norseman, with clear, fresh face, and beard and hair of the color of the over-ripe corn. Harald's private opinion was that the Polar cap was covered with the Palaecrustic Sea, and therefore valueless. But none the less, he intended to do the best he could for those who employed him.

The representative of the Russian financiers was Colonel Boris Karkof, half soldier, half diplomatist; tall, stiff, hairy, bearded, mustached; very uncomfortable in his civilian clothes, and unconsciously seeking for the handle of the sword he used to wear. The colonel was very anxious to know what was concealed in the proposition of the North Polar Practical Association, with a view to ascertaining if it would not give rise to international difficulties.

England having declined all participation in the matter, the only representatives of the British Empire were those from the Quebec Company. These were Major Donellan, a French-Canadian, whose ancestry is sufficiently apparent from his name, and a compatriot of his named Todrin. Donellan was tall, thin, bony, nervous, and angular, and of just such a figure as the Parisian comic journals caricature as that of an Englishman. Todrin was the very opposite of the Major, being short and thick-set, and talkative and amusing. He was said to be of Scotch descent, but no trace of it was observable in his name, his character, or his appearance.

#### Curious Debates

THE representatives arrived at Baltimore by different steamers. They were each furnished with the needful credit to outbid their rivals up to a certain point; but the limit differed in each case. The Canadian representatives had command of much the most liberal supplies, and it seemed as though the struggle would resolve itself into a dollar duel between the two American companies.

As soon as the delegates arrived they each tried to put themselves in communication with the North Polar Practical Association unknown to the others. Their object was to discover the motives of the enterprise, and the profit the Association expected to make out of it. But there was no trace of an office at Baltimore. The only address was that of William S. Forster, High Street, and the worthy codfish agent pretended that he knew nothing about it. The secret of the Association was impenetrable.

The consequence was that the delegates met, visited each other, cross-examined each other, and finally entered into communication with a view of taking united action against the Baltimore company. And one day, on the 22nd of November, they found themselves in conference at the Wolseley Hotel, in the rooms of Major Donellan and Todrin, the meeting being due to the diplomatic efforts of Colonel Boris Karkof.

To begin with, the conversation occupied itself with the advantages, commercial or industrial, which the Association expected to obtain from its Arctic domain. Professor Harald inquired if any of his colleagues had been able to ascertain anything with regard to this point; and all of them confessed that they had endeavored to pump William S. Forster without success.

"I failed," said Baldenak.

"I did not succeed," said Jansen.

"When I went," said Todrin, "I found a fat man in a black coat and wearing a stove-pipe hat. He had on a white apron, and when I asked him about this affair, he told me that the *South Star* had just arrived from Newfoundland with a full cargo of fine cod, which he was prepared to sell me on advantageous terms on behalf of Messrs. Ardrinell and Co."

"Eh! eh!" said the Councillor of the Dutch East Indies. "You had much better buy a full cargo of the fine cod than throw your money into the Arctic Sea."

"That's not the question," said the Major. "We are not talking of codfish, but of the Polar ice-cap—"

"Which," said Todrin, "the codfishman wants to wear."

"It will give him influenza," said the Russian.

"That is not the question," said the Major. "For some reason or other, this North Polar Practical Association—mark the word 'Practical,' gentlemen—wishes to buy four hundred and seven thousand square miles around the North Pole, from the eighty-fourth—"

"We know all that," said Professor Harald. "But what we want to know is, what do these people want to do with these territories, if they are territories, or these seas, if they are seas—"

"That is not the question," said Donellan. "Here is a company proposing to purchase a portion of the globe which, by its geographical position, seems to belong to Canada."

"To Russia," said Karkof.

"To Holland," said Jansen.

"To Scandinavia," said Harald.

"To Denmark," said Baldenak.

"Gentlemen!" said Todrin, "excuse me, but that is not the question. By our presence here we have admitted the principle that the circumpolar territories can be put up to auction, and become the property of the highest bidder. Now, as you have powers to draw to a certain amount, why should you not join forces and control such a sum as the Baltimore company will find it impossible to beat?"

The delegates looked at one another. A syndicate of syndicates! In these days we syndicate as unconcernedly as we breathe, as we drink, as we eat, as we sleep. Why not syndicate still further?

But there was an objection, or rather an explanation was necessary, and Jansen interpreted the feeling of the meeting when he asked:

"And after?"

Yes! After?

"But it seems to me that Canada—" said Donellan.

"And Russia—" said Karof.

"And Holland—" said Jansen.

"And Denmark—" said Baldenak.

"Don't quarrel, gentlemen," said Todrin. "What is the good? Let us form our syndicate."

"And after?" said Harald.

"After?" said Todrin. "Nothing can be simpler, gentlemen. When you have bought the property it will remain indivisible among you, and then for adequate compensation you can transfer it to one of

the syndicates we represent; but the Baltimore company will be out of it."

It was a good proposal, at least for the moment, for in the future the delegates could quarrel among themselves for the final settlement. Anyway, as Todrin had justly remarked, the Baltimore company would be out of it.

"That seems sensible," said Baldenak.

"Clever," said Karkof.

"Artful," said Harald.

"Sly," said Jansen.

"Quite Canadian," said Donellan.

"And so, gentlemen," said Karkof, "it is perfectly understood that if we form a syndicate the rights of each will be entirely reserved."

"Agreed."

It only remained to discover what sums had been placed to the credit of the delegates by the several associations, which amounts when totaled would probably exceed anything at the disposal of the North Polar Practical people.

The question was asked by Todrin.

#### A Prospective Sale

BUT then came a change over the scene. There was complete silence. No one would reply. Open his purse, empty his pocket into the common cash-box, tell in advance how much he had to bid with—there was no hurry to do that! And if disagreement arose later on, if circumstances obliged the delegates to look after themselves, if the diplomatic Karkof were to feel hurt at the little wiles of Jansen, who might take offense at the clumsy artifices of Baldenak, who, in turn, became irritated at the ingenuities of Harald, who might decline to support the pretentious claims of Donellan, who would find himself compelled to intrigue against all his colleagues individually and collectively—to proclaim the length of their purses was to reveal their game, which above all things they desired to keep in the dark.

Obviously there were only two ways of answering Todrin's indiscreet demand. They might exaggerate their resources, which would be embarrassing when they had to put the money down; or they might minimize them in such a way as to turn the proposition into a joke.

This idea occurred to the Dutchman.

"Gentlemen," said he, "I regret that for the acquisition of the Arctic regions I am unable to dispose of more than fifty gulden."

"And," said the Russian, "all I have to venture is thirty-five roubles."

"I have twenty kroner," said Harald.

"I have only fifteen," said Baldenak.

"Well," said the Major, "it is evident that the profit in this matter will be yours, for all I have at my disposal is the miserable sum of thirty cents."

#### CHAPTER III

##### The North Pole Is Knocked Down to the Highest Bidder

**T**HAT the sale on the 3rd of December should take place in the Auction Mart might appear strange. As a rule, only furniture, instruments, pictures, and objects of art were sold there. But for this curious departure from the ordinary

practice in the sale of land a precedent was discoverable, as already a portion of our planet had changed hands under the hammer.

A few years before, at San Francisco, in California, an island in the Pacific Ocean, Spencer Island, had been sold to the rich W. W. Kolderup, when he outbid J. R. Taskinar, of Stockton. Spencer Island was habitable; it was only a few degrees from the Californian coast; it had forests, watercourses, a fertile soil, and fields and prairies fit for cultivation; it was not an indefinite region, covered perhaps with sea and perpetual ice, which probably no one would ever occupy. For Spencer Island four million dollars had been paid; for the Polar territories it was not to be expected that anything like that amount would be forthcoming.

Nevertheless, the strangeness of the affair had brought together a considerable crowd, chiefly of lookers-on, to witness the result. The sale was to take place at noon, and all the morning the traffic in Bolton Street was seriously interfered with. Long before the hour fixed for the sale the room was full, with the exception of a few seats railed off and reserved for the delegates; and when Baldenak, Karkof, Jansen, Harald, Donellan, and Todrin had taken these places, they formed a compact group, shoulder to shoulder, and looked as if they were a veritable storming column ready for the assault of the Pole.

Close to them was the consignee of codfish, whose vulgar visage expressed the sublimest indifference. He looked the least excited of all the crowd, and seemed to be thinking only of how he could profitably dispose of the cargoes now on their way to him from Newfoundland. Who were the capitalists represented by this man, with probably millions of dollars at his command?

There was nothing to show that J. T. Maston and Mrs. Scorbitt had anything to do with the affair. How could it be supposed that they had? They were there, though, but lost in the crowd, and were surrounded by a few of the principal members of the Gun Club, apparently simply as spectators and quite disinterested. William S. Forster seemed to have not the least knowledge of their existence.

#### A Curious Auction Sale

**A**S it was impossible to hand around the North Pole for the purposes of examination, a large map of the Arctic regions had been hung behind the auctioneer's desk. Seventeen degrees above the Arctic Circle a broad red line around the eighty-fourth parallel marked off the portion of the globe which the North Polar Practical Association had brought to the hammer. According to the map, the region was occupied by a sea covered with an icecap of considerable thickness. But that was the affair of the purchasers. At least, no one could complain that they had been deceived as to the nature of the goods.

As twelve o'clock struck, the auctioneer, Andrew R. Gilmour, entered by a little door behind his desk. He surveyed the assembly for an instant through his glasses, and then, calling for silence by a tap from his hammer, he addressed the crowd as follows:

"Gentlemen, I have been instructed by the Federal

Government to offer for sale a property situated at the North Pole, bounded by the eighty-fourth parallel of latitude, and consisting of certain continents and seas, either solid or liquid—but which I am not quite sure. Kindly cast your eyes on this map. It has been compiled according to the latest information. You will see that the area is approximately four hundred and seven thousand square miles. To facilitate the sale it has been decided that the biddings for this extensive region shall be made per square mile. You will therefore understand that every cent bid will represent in round numbers 407,000 cents, and every dollar 407,000 dollars. I must ask you to be silent, gentlemen, if you please."

The appeal was not superfluous, for the impatience of the public was producing a gradually-increasing tumult that would drown the voices of the bidders.

When tolerable quietness had been established, thanks to the intervention of Flint, the auctioneer's porter, who, roared like a siren on a foggy day, Gilmour continued:

"Before we begin the biddings, I think it right to remind you of three things. The property has only one boundary, that of the eighty-fourth degree of north latitude. It has a guaranteed title. And it will remain the property of the purchasers, no matter what geographical or meteorological modifications the future may produce."

Always this curious observation!

"Now, gentlemen," said Gilmour; "what offers?" and, giving his hammer a preliminary shake, he continued in a nasal tone. "We will start at ten cents the square mile."

Ten cents, the tenth of a dollar, meant 40,700 dollars for the lot.

Whether Gilmour had a purchaser at this price or not, the amount was quickly increased by Balde-nak.

"Twenty cents!" he said.

"Thirty cents!" said Jansen for the Dutchmen.

"Thirty-five!" said Professor Harald.

"Forty!" said the Russian.

That meant 162,800 dollars, and yet the bidding had only begun. The Canadians had not even opened their mouths. And William S. Forster seemed absorbed in the *Newfoundland Mercury*.

"Now, gentlemen," said Gilmour, "any advance on forty cents? Forty cents! Come, the Polar Cap is worth more than that; it is—"

What he would have added is unknown; perhaps it was, "guaranteed pure ice"; but the Dane interrupted him with:

"Fifty cents!"

Which the Dutchman at once capped with:

"Sixty!"

"Sixty cents the square mile! Any advance on sixty cents?"

These sixty cents made the respectable sum of 244,200 dollars.

At Jansen's bid, Donellan raised his head and looked at Todrin; but at an almost imperceptible negative sign from him he remained silent.

All that Forster did was to scrawl a few notes on the margin of his newspaper.

"Come, gentlemen," said the auctioneer; "wake up! Surely you are going to give more than that?"

And the hammer began to move up and down, as if in disgust at the weakness of the bidding.

"Seventy cents!" said Harald in a voice that trembled a little.

"Eighty cents!" said Karkof, almost in the same breath.

A nod from Todrin woke up the Major, as if he were on springs.

"Hundred cents!" said the Canadian.

That meant 407,000 dollars.

Four hundred and seven thousand dollars! A high price to pay for a collection of icebergs, ice-fields, and ice-floes!

And the representative of the North Pole Practical Association did not even raise his eyes from his newspaper. Had he been instructed not to bid? If he had waited for his competitors to bid their highest, surely the moment had come? In fact, their look of dismay when the Major fired his "hundred cents" showed that they had abandoned the battle.

#### The Last Bids

"A HUNDRED cents the square mile!" said the auctioneer. "Any advance? Is that so? Is that so? No advance?"

And he took a firm grasp on his hammer, and looked around him.

"Once!" he continued. "Twice! Any advance?"

"A hundred and twenty cents!" said Forster, quietly, as he turned over the page of his newspaper.

"And forty!" said the Major.

"And sixty!" drawled Forster.

"And eighty!" drawled the Major, quite as placidly.

"A hundred and ninety!" said Forster.

"And five!" said the Major, as if it were a mere casual observation.

You might have heard an ant walk, a bleak swim, a moth fly, a worm wriggle or a microbe wag its tail—if it has a tail.

Gilmour allowed a few moments to pass, which seemed like centuries. The consignee of codfish continued reading his newspaper and jotting down figures on the margin which had evidently nothing to do with the matter on hand. Had he reached the length of his tether? Had he made his last bid? Did this price of 195 cents the square mile, or 793,050 dollars for the whole, appear to him to have reached the last limit of absurdity?

"One hundred and ninety-five cents!" said the auctioneer. "Going at one hundred and ninety-five cents!"

And he raised his hammer.

"One hundred and ninety-five cents! Going! Going!"

And every eye was turned on the representative of the North Polar Practical Association.

That extraordinary man drew a large handkerchief from his pocket, and, hiding his face in it, blew a long, sonorous blast with his nose.

Then J. T. Maston looked at him, and Mrs. Scorbitt's eyes took the same direction. And by the paleness of their features it could be seen how keen was the excitement they were striving to subdue. Why did Forster hesitate to outbid the Major?

Forster blew his nose a second time; then, with

an even louder blast, he blew it a third time. And between the blasts he quietly observed.

"Two hundred cents!"

A shudder ran through the hall.

The Major seemed overwhelmed, and fell back against Todrin. At this price per square mile, the Arctic regions would cost \$14,000 dollars. The Canadian limit had evidently been passed.

"Two hundred cents!" said Gilmour. "Once! Twice! Any advance?" he continued.

The Major looked at the Professor, and the Colonel, and the Dutchman, and the Dane; and the Professor, and the Colonel, and the Dutchman, and the Dane looked at the Major.

"Going! Going!" said the auctioneer.

Everyone looked at the codfish man.

"Gone!"

And down went Gilmour's hammer.

The North Polar Practical Association, represented by William S. Forster, had become the proprietors of the North Pole and its promising neighborhood. And when William S. Forster had to name the real purchasers, he placidly drawled, "Barbicane & Co!"

#### CHAPTER IV.

##### Old Acquaintances

**B**ARBICANE & CO! The president of the Gun Club! What was the Gun Club going to do with the North Pole? We shall see.

Is it necessary formally to introduce Impey Barbicane, the president of the Gun Club, and Captain Nicholl, and J. T. Maston, and Tom Hunter with the wooden legs, and the brisk Bilsby, and Colonel Bloomsberry and their colleagues? No! Although twenty years had elapsed since the attention of the world was concentrated on these remarkable personages, they had remained much as they were, just as incomplete corporeally, and just as obstreperous, just as daring, just as wrapped up in themselves as when they had embarked in their extraordinary adventure. Time had made no impression on the Gun Club; it respected them as people respect the obsolete cannon that are found in the museums of old arsenals.

If the Gun Club comprised 1833 members at its foundation—that is persons and not limbs, for a number of these were missing—if 30,575 correspondents were proud of their connection with the club, the number had in no way decreased. On the contrary, thanks to the unprecedented attempt they had made to open communication with the Moon, as related in the *Moon Voyage*\* its celebrity had increased enormously.

It will be remembered that a few years after the War of Secession certain members of the Gun Club tired of doing nothing, had proposed to send a projectile to the Moon by means of a monster Columbiad. A gun nine hundred feet long had been solemnly cast at Tampa Town, in the Floridan peninsula, and loaded with 400,000 lbs. of fulminating cotton. Shot out by this gun, a cylindroconical shell of aluminium had been sent flying among the stars of the night under a pressure of six million millions

of litres of gas. Owing to a deviation of the trajectory, the projectile had gone around the Moon and fallen back to the earth, dropping into the Pacific Ocean in lat. 27° 7' N., long. 141° 37' west; when the frigate *Susquehanna* had secured it, to the great satisfaction of its passengers.

Of its passengers, two members of the Gun Club, the president, Impey Barbicane, and Captain Nicholl, with a hair-brained Frenchman, had taken passage in the projectile and had all returned from the voyage safe and sound. But if the two Americans were then present ready to risk their lives in some new adventure, it was not so with Michael Ardan. He had returned to Europe, and made a fortune, and was now planting cabbages in his retirement, if the best-informed reporters were to be believed.

Barbicane and Nicholl had also retired, comparatively speaking, but they had retired only to dream of some new enterprise of a similar character. They were in no want of money. From their last undertaking there remained nearly two hundred thousand dollars out of the five millions and a half yielded by the public subscriptions of the old and new worlds; and by exhibiting themselves in their aluminium projectile throughout the United States they had realized enough wealth and glory to satisfy the most exacting of human ambitions. They would have been content if idleness had not been wearisome to them; and it was probably in order to find something to do that they had now bought the Arctic regions.

But it should not be forgotten that if they had paid for their purchase eight hundred thousand dollars and more, it was because Evangeline Scorbitt had advanced the balance they required.

Although Barbicane and Nicholl enjoyed incomparable celebrity, there was one who shared it with them. This was J. T. Maston, the impetuous secretary of the Gun Club. Was it not this able mathematician who had made the calculations which had enabled the great experiment to be made? If he had not accompanied his two colleagues on their extraordinary voyage, it was not from fear; certainly not! But the worthy gunner wanted a right arm, and had a guttta-percha cranium, owing to one of those accidents so common in warfare; and if he had shown himself to the Selenites it might have given them an erroneous idea of the inhabitants of the Earth, of which the Moon after all is but the humble satellite.

To his profound regret J. T. Maston had had to resign himself to staying at home. But he was not idle. After the construction of the immense telescope on the summit of Long's Peak, one of the highest of the Rocky Mountains, he had transported himself there, and from the moment he found the projectile describing its majestic trajectory in the sky he never left his post of observation. At the eye-piece of the huge instrument he devoted himself to the task of following his friends as they journeyed in their strange carriage through space.

##### Rescue of the Moon Voyagers

**I**T might be thought that the bold voyagers were forever lost to earth. The projectile, drawn into a new orbit by the Moon, might gravitate eternally

\*This story will appear in an early issue of AMAZING STORIES.

around the Queen of the Night as a sort of sub-satellite. But no. A deviation, which by many was called providential, had modified the projectile's direction, and, after making the circle of the Moon, brought it back from that spheroid at a speed of 17,280 miles an hour at the moment it plunged into the ocean.

Luckily the liquid mass of the Pacific had broken the fall, which had been perceived by the U. S. Frigate *Susquehanna*. As soon as the news had reached J. T. Maston, he had set out in all haste from the observatory at Long's Peak to the rescue of his friends. Soundings were taken in the vicinity of where the shell had been seen to fall, and the devoted Maston had not hesitated to go down in diver's dress to find his friends. But such trouble was unnecessary. The projectile being of aluminum, displacing an amount of water greater than its own weight, had returned to the surface of the Pacific after a magnificent plunge. And President Barbicane, Captain Nicholl, and Michael Ardan were found in their floating prison playing dominoes.

The part that Maston took in these extraordinary proceedings had brought him prominently to the front. He was not handsome, with his artificial cranium and his mechanical arm with its hook for a hand. He was not young, for fifty-eight years had chimed and struck at the date of our story's beginning. But the originality of his character, the vivacity of his intelligence, the fire in his eye, the impetuosity with which he had attacked everything, had made him the beau-ideal of a man in the eyes of Evangelina Scorbitt. His brain, carefully protected beneath its gutta-percha roof was intact, and justly bore the reputation of being one of the most remarkable of the day.

Mrs. Scorbitt—though the least calculation gave her a headache—had a taste for mathematicians if she had not one for mathematics. She looked upon them as upon beings of a peculiar and superior species. Heads where  $x$ 's knocked against  $x'$ 's like nuts in a bag, brains which rejoiced in algebraic formulae, hands which threw about triple integrals as an equilibrist plays with glasses and bottles, intelligences which understood this sort of thing:

$$fff\Phi(xyz)dx dy dz$$

—these were the wise men who appeared worthy of all the admiration of a woman, attracted to them proportionately to their mass and in inverse ratio to the square of their distances. And J. T. Maston was bulky enough to exercise on her an irresistible attraction, and as to the distance between them it would be simply zero, if she succeeded in her plans.

It must be confessed that this gave some anxiety to the secretary of the Gun Club, who had never sought happiness in such close approximations. Besides, Evangelina Scorbitt was no longer in her first youth; but she was not a bad sort of person by any means, and she would have wanted for nothing could she only see the day when she was introduced to the drawing-rooms of Baltimore as Mrs. J. T. Maston.

The widow's fortune was considerable. Not that she was as rich as Gould, Mackaye, Vanderbilt, or Gordon Bennett, whose fortunes exceed millions, and who could give alms to a Rothschild. Not that she possessed the millions of Mrs. Moses Car-

per, Mrs. Stewart, or Mrs. Crocker; nor was she as rich as Mrs. Hammersley, Mrs. Hetty Green, Mrs. Maffitt, Mrs. Marshall, Mrs. Faran Stevens, Mrs. Mintbury, and a few others. But she was the possessor of four good millions of dollars, which had come to her from John P. Scorbitt, who had made a fortune by trade in fashionable sundries and salt pork. And this fortune the generous widow would have been happy to employ for the advantage of J. T. Maston, to whom she would bring a treasure of tenderness yet more inexhaustible.

At Maston's request, she had cheerfully consented to put several hundreds of thousands of dollars at the disposal of the North Polar Practical Association, without even knowing what it was all about. With J. T. Maston concerned in it she felt assured that the work could not but be grandiose, sublime, super-excellent. The past of the Gun Club's secretary was voucher enough for the future.

It may be guessed, therefore, if she lost confidence when the auctioneer's hammer knocked down the North Pole to Barbicane & Co. While J. T. Maston formed part of the "Co." could she do otherwise than applaud?

#### Mrs. Scorbitt's New Estate

AND thus it happened that Evangelina Scorbitt found herself chief proprietor of the Arctic regions within the eighty-fourth parallel. But what would she do with them? Or rather, how was the company to get any benefit out of it?

That was the question! And if in a pecuniary sense it had much interest for Mrs. Scorbitt, from a curiosity point of view it had quite as much interest for the world at large.

The trusting widow had asked a few questions of Maston before she advanced the funds. But Maston invariably maintained the closest reserve. Mrs. Scorbitt, he remarked, would know soon enough, but not before the hour had come, for she would be astonished at the object of the new association.

Doubtless he was thinking of some undertaking which to quote Jean Jacques, "never had an example, and never will have imitators," of something destined to leave far behind the attempt made by the Gun Club to open up communication with the Moon.

When Evangelina grew somewhat pressing in her inquiries, J. T. Maston had placed his hook on his half-closed lips, and remarked soothingly, "Have confidence, Mrs. Scorbitt; have confidence!"

And if Mrs. Scorbitt had confidence before the sale, what immense joy she must have experienced at the result! Still she could not help asking the eminent mathematician, what he was going to do next. And though she smiled on him bewitchingly, the eminent mathematician only replied, as he cordially shook her hand, "You will know very soon!"

That shake of the hand immediately calmed the impatience of Mrs. Scorbitt, and a few days later there was another shake, for the old and new worlds were considerably shaken—to say nothing of the shake that was coming—when they learned the project for which the North Polar Practical Association appealed to the public for subscriptions.

The company announced that it had "acquired" the territory for the purpose of working—"the coal-fields at the North Pole!"

## CHAPTER V

## The Polar Coal-Field

**B**UT are there any coal-fields at the Pole?" Such was the first question that presented itself.

"Why should there be coal at the Pole?" said some.

"Why should there not be?" said others.

Coal-beds are found in many parts of the world. There is coal in Europe; there is coal in America; and in Africa; and in Asia; and in Oceania. As the globe is more and more explored, beds of fossil fuel are revealed in strata of all ages. There is true coal in the primary rocks, and there is lignite in the secondaries and terciaries.

England alone produces a hundred and sixty millions of tons a year; the world consumes four hundred million tons, and with the requirements of industry there is no decrease but an increase in the consumption. The substitution of electricity for steam as a motive power means the expenditure of coal just the same. The industrial stomach cannot live without coal; industry is a carbonivorous animal and must have its proper food.

Carbon is something else than a combustible. It is the telluric substance from which science draws the major part of the products and by-products used in the arts. With the transformations to which it is subject in the crucibles of the laboratory you can dye, sweeten, perfume, vaporize, purify, heat, light, and you can produce the diamond.

But the coal-beds from which our carbon at present chiefly comes are not inexhaustible. And the well-informed people who are in fear for the future are looking about for new supplies wherever there is a probability of their existence.

"But why should there be coal at the Pole?"

"Why?" replied the supporters of President Barbicane. "Because in the carboniferous period, according to a well-known theory, the volume of the Sun was such that the difference in temperature between the Equator and the Poles was inappreciable. Immense forests covered the northern regions long before the appearance of man, when our planet was subject to the prolonged influence of heat and humidity."

And this the journals, reviews, and magazines that supported the North Polar Practical Association insisted on in a thousand articles, popular and scientific. If these forests existed, what more reasonable to suppose than that the weather, the water, and the warmth had converted them into coal-beds?

But in addition to this there were certain facts which were undeniable. And these were important enough to suggest that a search might be made for the mineral in the regions indicated.

So thought Donellan and Todrin as they sat together in a corner of the "Two Friends."

"Well," said Todrin, "can Barbicane be right?"

"It is very likely," said the Major.

"But then there are fortunes to be made in opening up the Polar regions!"

## How About Coal?

**A**SSUREDLY," said the Major. "North America has immense deposits of coal; new discoveries are often being announced, and there are

doubtless more to follow. The Arctic regions seem to be a part of the American continent geologically. They are similar in formation and physiography.

Greenland is a prolongation of the new world, and certainly Greenland belongs to America—"

"As the horse's head, which it looks like, belongs to the animal's body," said Todrin.

"Nordenskiöld," said Donellan, "when he explored Greenland, found among the sandstones and schists intercalations of lignite with many forest plants. Even in the Disko district, Streestrup discovered eleven localities with abundant vestiges of the luxuriant vegetation which formerly encircled the Pole."

"But higher up?" asked Todrin.

"Higher up, or farther up to the northward," said the Major, "the presence of coal is extremely probable, and it only has to be looked for. And if there is coal on the surface, is it not reasonable to suppose that there is coal underneath?"

The Major was right. He was thoroughly posted up in all that concerned the geology of the Arctic regions, and he would have held on for some time if he had not noticed that the people in the "Two Friends" were listening to him.

"Are you not surprised at one thing, Major?"

"What is that?"

"That in this affair, in which you would expect to meet with engineers and navigators, you have only to deal with artillerists. What have they to do with the coal-mines of the North Pole?"

"That is rather surprising," said the Major.

And every morning the newspapers returned to this matter of the coal-mines.

"Coal-beds!" said one, "what coal-beds?"

"What coal-beds?" replied another; "why, those that Nares found in 1875 and 1876 on the eighty-second parallel, when his people found the miocene flora rich in poplars, beeches, viburnums, hazels, and conifers."

"And in 1881-1884," added the scientific chronicler of the *New York Witness*, "during the Greely expedition to Lady Franklin Bay, a bed of coal was discovered by our men at Watercourse Creek, close to Fort Conger. Did not Dr. Pavly rightly consider that these carboniferous deposits were apparently destined to be used some day for contending with the cold of that desolate region?"

When these facts were brought forward, it will be easily understood that Impey Barbicane's adversaries were hard up for a reply. The partisans of the "Why should there be coal?" had to lower their flag to the partisans of "Why should there not be?" Yes, there was coal! And probably a considerable amount of it. The circumpolar area contained large deposits of the precious combustible on the site of the formerly luxuriant vegetation.

But if the ground were cut from under their feet regarding the existence of the coal, the detractors took their revenge in attacking the question from another point.

"Be it so!" said the Major one day in the rooms of the Gun Club itself, when he discussed the matter with Barbicane. "Be it so! I admit there is coal there; I am convinced there is coal there. But work it!"

"That we are going to do," said Barbicane tranquilly.

"Get within the eighty-fourth parallel, beyond which no explorer has yet gone!"

"We will get beyond it!"

"Go to the Pole itself!"

"We are going there!"

And in listening to the president of the Gun Club making these cool answers, talking with such assurance, expressing his opinion so haughtily and unmistakably, the most obstinate began to hesitate. They felt they were in the presence of a man who had lost nothing of his former qualities; calm, cool, with a mind eminently serious and concentrated, exact as a chronometer, adventurous, and bringing the most practical ideas to bear on the most daring undertakings. Solid, morally and physically, he was "deep in the water," to employ a metaphor of Napoleon's, and could hold his own against wind or tide. His enemies and rivals knew that only too well.

He had stated that he would reach the North Pole! He would set foot where no human foot had been set before. He would hoist the Stars and Stripes on one of the two spots of earth which remained immovable while all the rest spun around in diurnal rotation!

#### Caricatures

**H**ERE was a chance for the caricaturists! In the windows of the shops and kiosks of the great cities of Europe and America there appeared thousands of sketches and prints displaying Impey Barbicane seeking the most extravagant means of attaining his object.

Here the daring American, assisted by all the members of the Gun Club, pickaxe in hand, was driving a submarine tunnel through masses of ice, which was to emerge at the very point of the axis.

Here Barbicane, accompanied by J. T. Maston—a very good portrait—and Captain Nicholl, descended in a balloon on the point in question, and, after unheard-of dangers, succeeding in capturing a lump of coal weighing half a pound, which was all the circumpolular deposit contained.

Here J. T. Maston, who was as popular as Barbicane with the caricaturists, had been seized by the magnetic attraction of the Pole, and was fast held to the ground by his metal hook.

And it may be remarked here that the celebrated calculator was of too touchy a temperament to laugh at any jest at his personal peculiarities. He was very much annoyed at it, and it will be easily imagined that Mrs. Scorbitt was not the last to share in his just indignation.

Another sketch, in the Brussels *Magic Lantern*, represented Impey Barbicane and his co-directors working in the midst of flames, like so many incombustible salamanders. To melt the ice of the Paleocrystic Sea, they had poured over it a sea of alcohol, and then lighted the spirit, so as to convert the polar basin into a bowl of punch. And, playing on the word punch, the Belgian designer had had the irreverence to represent the president of the Gun Club as a ridiculous punchinello.

But of all the caricatures, that which obtained the most success was published by the Parisian *Charivari* under the signature of "Stop." In the stomach of a whale, comfortably furnished and padded, Impey Barbicane and J. T. Maston sat smok-

ing and playing chess, waiting their arrival at their destination. The new Jonahs had not hesitated to avail themselves of an enormous marine mammifer, and by this new mode of locomotion had passed under the ice-floes to reach the inaccessible Pole.

The phlegmatic president was not in the least incommoded by this intemperance of pen and pencil. He let the world talk, and sing, and parody, and caricature; and he quietly went on with his work.

As soon as he had obtained the concession, he had issued an appeal to the public for the subscription of fifteen millions of dollars in hundred-dollar shares. Such was the credit of Barbicane & Co., that applications flowed in wholesale. But it is as well to say that nearly all the applications came from the United States.

"So much the better!" said the supporters of the North Polar Practical Association. "The work will be entirely American."

The prospectus was so plausible, the speculators believed so tenaciously in the realization of its promises, and admitted so imperturbably the existence of the Polar coal-mines, that the capital was subscribed three times over.

Two-thirds of the applications were declined with regret, and on the 16th of December the capital of fifteen millions of dollars was fully paid up. It was about thrice as much as the amount subscribed for the Gun Club when they made their great experiment of sending a projectile from the Earth to the Moon.

#### CHAPTER VI

##### A Telephonic Conversation

**N**OT only had Barbicane announced that he would attain his object—and now the capital at his command enabled him to reach it without hindrance—but he would certainly not have appealed for funds if he were not certain of success.

The North Pole was at last to be conquered by the audacious genius of man!

Barbicane and his co-directors had the means of succeeding where so many others had failed. They would do what had not been done by Franklin, Kane, Nares, or Greely. They would advance beyond the eighty-fourth parallel. They would take possession of the vast portion of the globe that had fallen to them under the hammer. They would add to the American flag the forty-third star for the forty-third state annexed to the American Confederation.

"Rubbish!" said the European delegates.

And the means of conquering the Pole—means that were practical, logical, indisputable, and of a simplicity quite infantine—were the suggestions of J. T. Maston. It was in his brain, where ideas were cooked in cerebral matter in a state of constant ebullition, that there had been conceived this great geographical work, and the means devised of bringing it to a successful issue.

##### Complicated Mathematics

**T**HE secretary of the Gun Club was a remarkable calculator. The solution of the most complicated problems of mathematical science was but sport to him. He laughed at difficulties, whether in the science of magnitudes, that is algebra, or in the science of numbers, that is arithmetic; and it was a treat to see him handle the symbols, the conven-

tional signs which form the algebraic notation, whether letters of the alphabet, representing quantities or magnitudes, or lines coupled or crossed, which indicate the relation between the quantities and the operations to which they are submitted.

Ah! The co-efficients, the exponents, the radicals, the indices, and the other arrangements adopted in that language! How the signs leaped from the pen, or rather from the piece of chalk which wriggled at the end of his metal hook, for he preferred to work on a blackboard. There, on a surface of ten square yards—for nothing less would do for J. T. Maston—he reveled in all the ardor of his algebraical temperament. They were no miserable little figures that he employed in his calculations. No; the figures were fantastic, gigantic, traced with a furious hand. His 2's and 3's waltzed like shavings in a whirlwind; his 7's were like gibbets, and only wanted a corpse to complete them; his 8's were like spectacles; and his 6's and 9's had flourishes indeterminable!

And the letters with which he built up his formulae! The *a*'s and *b*'s and *c*'s he used for his quantities given or known; and the *x*'s *y*'s and *z*'s he used for his quantities sought or unknown, and especially his *z*'s, which twisted in zigzags like lightning flashes! And what turns and twiggles there were in his *w*'s his *λ*'s, his *ω*'s! Even a Euclid or an Archimedes would have been proud of them.

And as to his signs, in pure unblurred chalk, they were simply marvellous. His + showed the addition was unmistakable. His —, though humbler, was quite a work of art. His × was as clear as a St. Andrew's cross. And as to his =, so rigorously equal were they, as to indicate without a chance of mistake, that J. T. Maston lived in a country where equality was no vain formula. His <, his > and his ▷ were really grand! And as to his √, the root of a quality or of a number, it was really a triumph, and when he completed the horizontal bar in this style



it seemed as if the indicatory vinculum would shoot clean off the blackboard and menace the world with inclusion within the maniacal equation.

But do not suppose that the mathematical intelligence of J. T. Maston was bounded by the horizon of elementary algebra. No! The differential calculus, the integral calculus, the calculus of variations were no strangers to him, and with unshaking hand he dashed down the famous sign of integration, the shape so terrible in its simplicity, the



that speaks of an infinity of elements of the infinitely little.

And like it was his Σ which represents the sum of a finite number of finite elements; like it was his ω with which mathematicians indicate the variant; like it were all the mysterious symbols employed in this language so unintelligible to ordinary mortals. In short, this astonishing man was capable of mounting the mathematical ladder to the very topmost rung.

Such was J. T. Maston. No wonder his colleagues had every confidence in him when he undertook to solve the wildest abracadabrant calculations that occurred to their audacious brains! No wonder that

the Gun Club had confided to him the problem regarding the hurling of the projectiles from the Earth to the Moon! No wonder that Evangelina Scorbitt was intoxicated with the glory, and had conceived for him an admiration which perilously bordered on love!

But in the case under consideration, the solution of the problem regarding the conquest of the North Pole, J. T. Maston had no flight to take in the sublime regions of analysis. To allow the concessionaries of the Arctic regions to make use of their new possessions, the secretary of the Gun Club had put a simple problem in mechanics to occupy his mind. It was a complicated problem, no doubt, requiring ingenious and possibly novel formulæ, but it could be done.

Yes! They could trust J. T. Maston, although the slightest slip might entail the loss of millions! But never since his baby head had toyed with the first notions of arithmetic had he made a mistake, never had he been the millionth of an inch out in a matter of measurement, and if he had made an error in the last of twenty places of decimals his gutta-percha cranium would have burst its fixings.

It was important to insist on the remarkable mathematical powers of J. T. Maston. We have done so! Now we have to show him at work, and to do that we must go back a few weeks.

About a month before the famous advertisement, J. T. Maston had been requested to work out the elements of the project of which he had suggested to his colleagues the marvelous consequences.

For many years he had lived at No. 179 Franklin Street, one of the quietest streets in Baltimore, far from the business quarter, for in commerce he took no interest; far from the noise of the crowd, for the mob he abhorred.

There he occupied a modest habitation known as Ballistic Cottage, living on the pension he drew as an old artillery officer, and on the salary paid him as the Gun Club secretary. He lived alone with one servant, Fire-Fire, a name worthy of an artilleryman's valet. This negro was a servant of the first-water, and he served his master as faithfully as he would have served a gun.

#### The Mathematician Described

J. T. MASTON was a confirmed bachelor, being of J. opinion that bachelorhood is the only state worth caring about in this sublunary sphere. He knew the Slav proverb, that a woman draws more with one hair than four oxen in a plow; and he was on his guard.

If he was alone at Ballistic Cottage, it was because he wished to be alone. He had only to nod to change his solitude of one into solitude of two, and help himself to half the fortune of a millionaire. There was no doubt of it. Mrs. Scorbitt would only have been too happy; but J. T. Maston was not going to be too happy; and it seemed that these two people so admirably adapted to each other—in the widow's opinion—would never understand each other.

The cottage was a very quiet one. There was a ground-floor and a first-floor. The ground-floor had its veranda, its reception-room and dining-room, and the kitchen in a small annex in the garden. Above them was a bedroom in front, and a workroom facing the garden away from the noise, a *buen retiro* of the savant and the sage within whose walls

were solved calculations that would have raised the envy of a Newton or a Laplace.

Different, indeed, was the home of Mrs. Scorbitt, in the fashionable quarter of New Park, with the balconies on its front covered with the fantastic sculpture of American architecture, Gothic and Renaissance jumbled together; its enormous hall, its picture galleries, its double twisted staircase, its numerous domestics, its stables, its coach-houses, its gardens, its lawns, its trees, its fountains, and the tower which dominated its battlements from the summit of which fluttered in the breeze the blue and gold banner of the Scorbitts.

Three miles divided New Park from Ballistic Cottage. But a telephone wire united the two habitations, and at the ringing of the call between the mansion and the cottage conversation could be instantly established. If the talkers could not see each other, they could hear each other; and no one will be surprised to learn that Evangelina Scorbitt called J. T. Maston much oftener before his telephone than did J. T. Maston summon Evangelina Scorbitt before hers. The mathematician would leave his work, not without some disgust, to receive a friendly "good morning," and he would reply by a growl along the wire, which he hoped would soften as it went, and then he would return to his problems.

It was on the 3rd of October, after a last and long conference, that J. T. Maston took leave of his colleagues to devote himself to his task. It was the most important investigation he had ever undertaken. He had to calculate the mechanical formulæ required for the advance on the Pole, and the economical working of the coal-beds thereof. He estimated that it would take him rather more than a week to accomplish this mysterious task. It was a complicated and delicate inquiry, necessitating the resolution of a large number of equations dealing with mechanics, analytical geometry of the three dimensions, and spherical trigonometry.

To be free from trouble, it had been arranged that the secretary of the Gun Club should retire to his cottage, and be visited and disturbed by no one. This was a great trial for Mrs. Scorbitt, but she had to resign herself to it. She and President Barbicane, Captain Nicholl, the brisk Bilsby, Colonel Bloomsberry, and Tom Hunter with his wooden legs, had called on Maston in the afternoon to bid him farewell for a time.

"You will succeed, dear Maston," she said, as she rose to go.

"But be sure you don't make a mistake," said Barbicane, with a smile.

"A mistake! He!" exclaimed Mrs. Scorbitt, with horror at the thought.

With a grip of the hand from some, a sigh from one, wishes for success, and recommendations not to overwork himself from others, the mathematician saw his friends depart. The door of Ballistic Cottage was shut, and Fire-Fire received orders to open it to no one—not even the President of the United States of America.

For the first two days of his seclusion J. T. Maston thought over the problem without touching the chalk. He read over certain works relative to the elements, the earth, its mass, its density, its volume, its form, its rotation on its axis, and translation

around its orbit—elements which were to form the bases of his calculations.

#### The Data for the Calculations

THESE are the principal ones, which it is as well the reader should have before him. Form of the Earth: an ellipsoid of revolution, with a major diameter of 7926.6 miles, and a minor diameter of 7899.6 miles. The difference between the two, owing to the flattening of the spheroid at the Poles being 27 miles, or one two-hundred-and-ninety-third of its mean diameter.

Circumference of the Earth at the Equator: 24,899 miles, the meridional circumference being 24,856 miles.

Surface of the Earth: 197,000,000 square miles.

Volume of the Earth: 260,000,000,000 cubic miles.

Density of the Earth: five and a half times that of water, the mass being approximately 6,000,000,000,000,000,000 tons.

Duration of the Earth's journey around the Sun: 365 days and a quarter, constituting the solar year, or more exactly 365 days, 6 hours, 9 minutes, thus giving the spheroid an average velocity of 66,000 miles an hour.

Rate of the Earth's rotation at the Equator: 1037.4583 miles per hour.

The following were the units of length, force, time, and inclination which J. T. Maston required for his calculations; the mile, the ton, the second, and the angle at the center which cuts off in any circle an arc equal to the radius.

It was on the 5th of October, at five o'clock in the afternoon—it is important to know the precise time in a work of such celebrity—that J. T. Maston, after much reflecting, began to write. And, to begin with, he attacked the problem at its base—that is, by the number representing the circumference of the Earth, which is one of its great circles, viz. the Equator.

The blackboard was placed in an angle of the room on an easel of polished oak, well in the light of one of the windows which opened on to the garden. Little sticks of chalk were placed on the shelf at the bottom of the board. A sponge to wipeout with was in the calculator's left hand. His right hand, or rather his hook, was reserved for writing down the figures of his working.

He began by describing the circumference of the terrestrial spheroid. At the Equator the curve of the globe was marked by a plain line representing the front part of the curve, and by a dotted line representing the back half of the curve. The axis was a perpendicular line cutting the Equator, and marked N. S.

On the left-hand top corner of the board he wrote the number that he used to represent the earth's circumference in metrical measurements—

40,000,000.

He knew that this was an assumption admitted to be erroneous, but it afforded a good round integer to begin with, and the subsequent rectification of his calculations by the inclusion of the missing meters was but child's-play to so transcendental a mathematician as J. T. Maston.

He was so pre-occupied that he had not noticed the state of the sky—which had changed considerably during the afternoon. For the last hour one of those great storms had been gathering which affect

the organizations of all living things. Livid clouds like whitish wool flocks had accumulated on the gray expanse and hung heavily over the city. The roll of distant thunder was heard. One or two flashes had already rent the atmosphere where the electric tension was at its highest.

J. T. Maston, more and more absorbed, saw nothing, heard nothing.

Suddenly an electric bell troubled the silence of the room with its hurried tinkling.

"Good!" exclaimed the mathematician. "If interrupters can't get in by the door, they come through the wire! A fine invention for people who wish to be left alone! I'll see if I can't turn that current off while I am at work!" And stepping up to the telephone, he asked, "Who wants me?"

"I want a moment's talk with you," said a feminine voice.

"And who is speaking?"

"Have you not recognized my voice, dear Mr. Maston? It is Mrs. Scorbitt."

"Mrs. Scorbitt! She will not leave me a moment's peace." But the last words were prudently muted above the instrument, so that the widow heard them not. And J. T. Maston, seeing that he must say something civil, replied, "Ah! It is you, Mrs. Scorbitt?"

"I, dear Mr. Maston!"

"And what does Mrs. Scorbitt want with me?"

"To tell you that there is a storm coming your way."

"Well, I cannot stop it—"

#### An Impending Thunder Storm

"NO, but I wanted to ask if you had taken care to shut your window—"

Mrs. Scorbitt had hardly ended before a tremendous clap of thunder filled the air. It seemed as though a vast sheet of silk had been torn apart for an infinity of length. The lightning had flashed down over Ballistic Cottage, and, conducted by the telephone wire, had invaded the mathematician's room with a brutality quite electric.

J. T. Maston, bending over the mouthpiece of the instrument, received the hardest voltaic knock that had ever found the mouth of a philosopher. The flash had run along his metal hook, and spun him around like a teetotum. The blackboard he struck with his back was hurled down in the corner. And the lightning disappeared out of the window.

Stunned for a moment—and it was a wonder it was no worse—J. T. Maston slowly rose, and rubbed the different parts of his body to make sure he was not hurt.

Then, having lost none of his coolness, as seemed the ancient pointer of the Columbiad,\* he put his room in order, picked up his easel, hoisted up his blackboard, gathered up the fragments of chalk scattered on the carpet, and resumed his work, which had been so rudely interrupted.

But he noticed that by the fall of the blackboard the figures he had written on the right-hand top corner, which represented in meters the approximate equatorial circumference of the earth, had been partially erased. He stretched his hook up to re-write them when the bell sounded with a feverish tinkle.

"Again!" exclaimed J. T. Maston. And he went to the telephone.

"Who is there?" he asked.

"Mrs. Scorbitt."

"And what does Mrs. Scorbitt want?"

"Did that horrible flash of lightning strike Ballistic Cottage?"

"I have every reason to believe so."

"Good Heavens! The lightning—"

"Do not be uneasy, Mrs. Scorbitt."

"You are not hurt, dear Mr. Maston?"

"Not at all."

"You are sure you have not been touched?"

"I am only touched by your thoughtfulness for me," said the philosopher gallantly.

"Good evening, dear Mr. Maston."

"Good evening, dear Mrs. Scorbitt."

And he returned to his blackboard.

"Confound that excellent woman," he said; "if she hadn't called me to the telephone I should not have run the chance of being struck by lightning."

And to insure being left in quiet, he judiciously put the telephone out of action.

Then he resumed his work. From the number on the board he gradually built up a definitive formula, and then noting it on the left, he cleared away the working by which he had arrived at it, and launched forth into an appalling series of figures and signs.

Eight days later the wonderful calculation was finished, and the secretary of the Gun Club triumphantly bore off to his colleagues the solution of the problem which they had awaited with a very natural impatience.

The practical means of arriving at the North Pole to work its coal-mines were mathematically established. Then the company was formed under the title of The North Polar Practical Association. Then the Arctic regions were purchased under the auctioneer's hammer. And then the shares were offered to the world.

#### CHAPTER VII

##### Barbicane Makes a Speech

**O**N the 22nd of December a general meeting was called of the shareholders of the North Pole Practical Association, to take place at the rooms of the Gun Club in Union Square. And the square itself was hardly large enough to hold the crowd.

Usually the large hall of the club was decorated with weapons of all sorts appropriate to the noble profession of its members. It was quite an artillery museum. Even the furniture itself, the chairs and tables, and couches, was of the pattern of the murderous engines which had sent to a better world so many worthy people whose secret desire had been to die of old age.

On this occasion the furniture had been removed. This was not a warlike assembly; it was an industrial and pacific assembly over which Barbicane was to preside. The hall was full to suffocation, and the crowd of those who could not get in stretched half across Union Square.

The members of the Gun Club who had held the first shares in the company had secured places around the platform. Among them, even more triumphant than usual, were Colonel Bloomsberry, Tom Hunter with the wooden legs, and the brisk Bilsby. A comfortable arm-chair had been reserved

\*The gun which discharged the passenger-carrying projectile of the "Moon Story."

for Mrs. Scorbitt, as was only right, considering that she was the chief proprietor of the Polar freehold; and there were a number of other lady shareholders belonging to all classes of the city, whose bright bonnets, and hats, and feathers, and ribbons, were a welcome relief to the black coats of the noisy men that crowded under the glazed cupola of the hall.

The immense majority of shareholders were not so much supporters as personal friends of the directors. But among the crowd were the representatives of the rival companies who had bid against Forster at the auction sale, and who now had taken shares in order to be qualified to vote and make mischief at the meetings. It can be easily imagined with what intense curiosity they awaited Barbicane's address, which would probably throw some light on the way in which the North Pole was to be reached. Perhaps there was a difficulty there even greater than working the mines? If any objections could be made we may be sure that Baldenak, Kar-kof, Jansen, and Harald were quite equal to making them. And the Major and his invaluable Todrin would lose no chance of driving Barbicane behind his last entrenchments.

#### A Share-Holders' Meeting

IT was eight o'clock. The hall, the side rooms, and the corridors of the Gun Club glowed with Edison lamps. Ever since the doors had been opened to the public there had been an incessant uproar, but as soon as the directors appeared all was silent.

At a table covered with a black cloth, on the platform, Barbicane, Nicholl, and J. T. Maston took up their positions in the fullest glare of the light. As they did so three cheers, punctuated by the needful "hips," broke forth, and were echoed in the adjacent streets. Solemly J. T. Maston and Captain Nicholl sat down in all the plentitude of their celebrity. Then Barbicane, who had remained standing, put his right hand in his trousers pocket, his left thumb in his waistcoat pocket, and began to speak as follows:—

"Fellow shareholders: The directorate of the North Polar Practical Association have called this meeting in the rooms of the Gun Club, as they have something of importance to communicate to you.

"You have learned from the newspapers that the object of our company is the opening up of the coal-fields of the North Pole, the concession of which we have obtained. The estate acquired in public auction is the property of the company, and the capital, which was all subscribed by the 11th of December last, enables us to enter at once on an enterprise which will produce a rate of interest unknown up to now in any commercial or industrial operation whatever."

Here the first murmur of approval for a moment interrupted the orator.

"You are aware of how we came to discover that there were rich beds of coal, and also possibly of fossil ivory, in the circumpolar regions. The statements in the public press leave no doubt as to the existence of these coal strata.

"Now coal has become the source of all modern industry. To say nothing of the fuel used for heating purposes, or of its employment for the production of steam and electricity, I may direct your attention to its derivatives, the aniline colors, the

perfumes, the picrates, salicylic acid, naphthol, phenol, antipyrin, benzin, naphthalin, pyrogallic acid, tannin, saccharin, tar, asphalt, pitch, lubricating oils, varnish, yellow prussiate of potash, cyanide, bitters, etc., etc."

And after this enumeration, which had been given with great rapidity, the orator paused like an exhausted runner to take a long breath. Then he continued, "It is indubitable that coal will in time be exhausted. Before five hundred years the mines in operation today—"

"Three hundred!" shouted one of the crowd.

"Two hundred!" roared another.

"Let us say a delay more or less restricted," said Barbicane, "and put ourselves in a position to see what new coal-fields then remain, supposing that the present fields are exhausted at the close of this century."

Here he paused to enable his audience to concentrate their attention. Then he continued, "Now, fellow shareholders, follow me, and let us start for the North Pole."

And the audience rose as if to pack their baggage ready for shipboard.

An observation from Major Donellan put a sudden stop to this movement of enthusiasm.

"Before you start," said he, "will you kindly inform the meeting how you intend going? Are you going by sea?"

"Neither by sea, nor by land, nor by air?" said Barbicane sweetly.

And the assembly sat down, a prey to very pardonable curiosity.

"You are not without some knowledge," continued the orator, "of the attempts that have been made to reach that inaccessible point of the terrestrial spheroid. It is better, however, that I should remind you of a few of them. It will be to render due honor to the bold pioneers who have survived and those who have succumbed in these expeditions."

Unanimous approval from the entire audience irrespective of nationality.

#### Early Expedition to the Arctic

"IN 1845," resumed Barbicane, "Sir John Franklin with the *Erebus* and *Terror* set out to find the North-West Passage, and nothing more was heard of him.

"In 1854 the American, Kane, and his lieutenant, Morton, went in search of Franklin. They returned, but their ship, the *Advance* did not return.

"In 1859 Sir Leopold MacClintock discovered a document from which it appeared that no survivor remained of the *Erebus* and *Terror* expedition.

"In 1860 Hayes left Boston in the schooner *United States*, crossed the eighty-first parallel, and returned in 1862 without being able to advance farther, notwithstanding the heroic efforts of his companions.

"In 1869 Captains Koldewey and Hegeman, both Germans, left Bremerhaven in the *Hansa* and *Germania*. The *Hansa* was crushed in the ice a little below the seventy-first parallel, and the crew had to take to their boats to reach the coast of Greenland. The *Germania* was more fortunate, and returned to Bremerhaven, but she had not been able to get higher than the seventy-seventh parallel.

"In 1871 Captain Hall left New York in the steamer *Polaris*. Four months afterward, during the ter-

rible winter, he died. A year later the *Polaris*, caught in the floes after reaching the eighty-second parallel, was crushed by the ice. Eighteen of her men, under Lieutenant Tyson, took refuge on an ice-floe and reached the continent after long drifting about in the Arctic Ocean.

"In 1875 Sir George Nares left Portsmouth with the *Alert* and *Discovery*. It was in his memorable Arctic campaign that winter quarters were established between the eighty-second and eighty-third parallels, and that Captain Markham, in a dash to the northward, stopped within four hundred miles of the Pole, no one up to then having been so near.

"In 1879 our great citizen, Gordon Bennett—"

Here there were three cheers given for the proprietor of the *New York Herald*.

"Fitted out the *Jeanette*, which he confided to Captain De Long. The *Jeanette* left San Francisco with thirty-three men, passed through Behring Straits, was caught by the ice at Herald Island, and sank at Bennett Island, near the seventy-seventh parallel. The men had only one resource; to make southward with the boats or journey over the ice-fields. Misery decimated them. De Long died in October. Many others succumbed, and twelve only returned from the expedition.

"In 1881 Lieutenant Greely left St. John's, Newfoundland, in the steamer *Proteus*, to establish a station on Lady Franklin Bay, a little below the eighty-second degree. There he founded Fort Conger, whence he sent out expeditions west and north, one of which, under Lieutenant Lockwood and his companion, Brainard, in May, 1882, claims to have reached  $83^{\circ} 35'$ , being fifteen miles nearer than Markham's farthest. That is the nearest yet obtained. It is the Ultima Thule of circumpolar cartography."\*

Here there were loud cheers in honor of the American discoverers.

"But," said Barbicane, "the expedition ended in disaster. The *Proteus* sank. Eighty-four men were left in frightful misery. Doctor Pavy died. Greely was discovered by the *Thetis* in 1883 with only six companions, and one of these was Lieutenant Lockwood, who soon succumbed, adding another name to the sorrowful martyrology of Arctic exploration."

There was respectful silence while Barbicane paused.

Then in a thrilling voice he resumed:

"And so, in spite of devotion and courage unparalleled, the eighty-fourth degree has never been passed. And we may even assert that it never will be by means of ships or sledges. It is not given to man to face such dangers and support such extremes of temperature. It is by other means we must advance to the conquest of the Pole!"

From the subdued murmur of the audience it was evident that therein lay the interest of the communication. What was this secret?

"And how are you going to capture it?" asked the Canadian.

"Before ten minutes are up you will know, sir," replied Barbicane, "and in addressing the shareholders generally I say, Have confidence in us, for the promoters of the affair are the same men who embarked in the cylindro-conical—"

"The cylindro-conical," interrupted Todrin.

"Dared to venture to the moon."

"And have come back as we see!" added Todrin, not without signs of disapproval.

"Yes," continued Barbicane, "within the next ten minutes you will know what we propose."

A murmur of "Oh!" and "Eh!" and "Ah!" rose in answer to the reply.

It seemed as though the orator had said, "Within the next ten minutes we shall be at the Pole!"

He continued, "And now, is it a continent at the Pole? Is it not a sea such as Sir George Nares called the Paleocystic Sea, the sea of ancient ice? To that I say, We do not think so."

"That is not good enough," said Baldenak. "It is not a question of not thinking so but of being certain."

#### Is There a Virgin Continent at the Pole?

"**W**ELL! I reply to our exuberant interrupter that we are certain. It is solid ground, not a liquid basin, that the North Polar Practical Association has purchased. It is a plateau like the desert of Gobi in Central Asia, two or three miles above sea-level, as can be easily and logically proved from the observations made in the regions of which the polar domain is really a prolongation. Norden-skiöld and other observers have all stated that Greenland increases in height as it goes northward. A hundred miles from Disko its altitude is nearly 7000 feet. And if we consider the different products, animal or vegetable, found in the secular ice, such as the carcasses of mastodons, the trunks of conifers, you can see that the continent was once a fertile one, inhabited certainly by animals, and probably by men. There lie buried the thick forests of pre-historic times, which have formed the coal-fields we propose to develop. Yes! It is a continent around the Pole, a virgin continent untrodden by human foot."\*\*

Great applause.

When the echoes of the applause had rolled away, the strident voice of the Canadian was heard, "Seven minutes out of the ten have gone, and we have not yet reached the Pole!"

"We will be there in three minutes," placidly remarked Barbicane.

He continued, "But if it is a continent, and the continent is elevated as we have reason to believe, it is obstructed by eternal ice, covered with rugged ice and ice-fields, and under such circumstances its development would be difficult—"

"Impossible!" said Harald.

"Impossible, I am aware," said Barbicane. "And it is to conquer this impossibility that our efforts are directed. We have no need of ships or sledges to reach the Pole, but thanks to our arrangements the fusion of the ice, ancient or modern, will take place like enchantment!"

He paused. There was absolute silence.

"Gentlemen," he continued, "Archimedes demanded but a fulcrum to lift the world! Well, we have found a fulcrum! A lever was what the great Syracusan geometer required, and a lever we possess! We are in a position to displace the Pole—"

"Displace the Pole!" exclaimed Baldenak.

"Bring it to Baltimore!" said Professor Harald. Evidently Barbicane did not wish to be more precise, for he continued, "As to this fulcrum—"

\*Peary reached the pole since then; recently Amundsen and Byrd have flown over it.

\*\*Neither Peary nor Byrd nor Amundsen found signs of any land at the Pole.

"Don't tell! Don't tell!" shouted one of the audience.

"As to this lever—"

"Keep it secret! Keep it secret!" shouted the spectators.

"We will keep it secret!" said Barbicane.

Baldenak and Co. protested in vain. The orator continued, "As to the results of this mechanical operation—an operation unprecedented in industrial annals—which we have undertaken and will bring to a successful issue thanks to your capital, I will say a few words."

"Listen! listen!" shouted the crowd.

"The first idea of our enterprise occurred to one of the most learned, devoted, and illustrious of our colleagues. To him also belongs the glory of having made the calculations which rendered the theory practicable, for if the development of the Polar mines is child's play, the displacement of the Pole is a problem which higher mechanics can alone deal with. That is why we addressed ourselves to our worthy secretary, J. T. Maston!"

"Hurrah! Hip! hip! hip! hurrah! for J. T. Maston!" shouted the whole assembly, electrified by the presence among them of that extraordinary man.

Ah! How much was Mrs. Scorbitt moved at the acclamations which resounded around the celebrated calculator!

He, with great modesty, bowed his head to the right; then to the left, and then saluted in front with his metal hook.

"Already," said Barbicane, "when the great meeting which celebrated the arrival in America of the Frenchman Michel Ardan, a few months before our departure for the Moon—"

The American spoke as coolly of the voyage to the Moon as of a railway journey to New York.

"J. T. Maston had exclaimed, 'Let us invent machines, let us find a fulcrum, and we will shift the axis of the Earth!' Many of you heard him, and will remember it. Well, the machines are invented, the fulcrum is found, and it is to the righting of the Earth's axis that our efforts will be directed."

#### Shifting the World's Axis

"WHAT!" exclaimed Donellan. "You will put the Earth's axis upright?"

"Yes, sir," said Barbicane; "or rather we can make a new axis on which the diurnal rotation formerly—"

"Modify the diurnal rotation!" exclaimed Karkof.

"Absolutely! and without touching its duration. The operation will bring the Pole to about the sixty-seventh parallel, and under such circumstances the Earth will behave like Jupiter, whose axis is nearly perpendicular to the plane of his orbit. This displacement of  $23^{\circ} 28'$  will suffice to obtain for our Polar property sufficient warmth to melt the ice accumulated for thousands of years."

The audience looked at him in a state of breathlessness. No one dared to interrupt or even to applaud him. All were overwhelmed with the idea, which was so ingenious and so simple; to change the axis on which the globe turns!

The representatives of the rival syndicates were astounded, annihilated, and remained without a word to say for themselves.

But the applause broke out when Barbicane con-

cluded with sublime simplicity, "Thus it is the Sun himself who will melt the icebergs and ice-floes, and render it easy to obtain access to the Pole!"

"And so," said Donellan, "if man cannot get to the Pole, the Pole must come to man?"

"Just so!" said Barbicane.

#### CHAPTER VIII

##### Like Jupiter

**Y**EAS! Like Jupiter. At the time of that memorable meeting in honor of Michel Ardan—so appropriately mentioned by the orator—if J. T. Maston had excitedly exclaimed, "Let us right the Earth's axis," it was because the daring and fantastical Frenchman, one of the heroes of the Moon Voyage, had chanted his dithyrambic hymn in honor of the most important planets of our solar system. In his superb panegyric he had celebrated the special advantages of the giant planet, as we briefly reported at the time.

The problem solved by the calculator of the Gun Club was the substitution of a new axis of rotation for the old one on which the Earth had turned ever since in popular phrase, "the world was a world." This new axis of rotation would be perpendicular to the plane of its orbit; and under such conditions the climatal situation of the old Pole would be much the same as that of Trondhjem, in Norway, in spring time. The palaeocrystic armor would thus naturally melt under the rays of the Sun; and at the same time climate would be distributed over the Earth as the climates are distributed in Jupiter.

The inclination of our planet's axis, or in other terms, the angle which its axis of rotation makes with the plane of its ecliptic is  $66^{\circ} 32'$ . A few degrees would thus bring the axis perpendicular to the plane of the orbit it describes around the Sun.

But—it is important to remark—the effort that the North Polar Practical Association was about to make would not, strictly speaking, right the Earth's axis. Mechanically, no force, however considerable, could accomplish that. The Earth is not like a chicken on a spit, that we can take it in our hand and shift it as we will. But the making of a new axis was possible—it may be said easy—if the engineers only had the fulcrum dreamed of by Archimedes and the lever imagined by J. T. Maston.

But as it had been decided to keep the invention a secret until further orders, all that could be done was to study the consequences. And to begin with, the journals and reviews of all sorts appealing to the learned and the ignorant devoted themselves to considering how Jupiter was affected by the approximate perpendicularity of his axis to the plane of his orbit.

Jupiter, like Mercury, Venus, the Earth, Mars, Saturn, Uranus, and Neptune, forms part of the solar system, and sweeps around at nearly five hundred million miles from the central fire; and his volume is about fourteen times that of the Earth.

##### The Zones of the Earth and of Jupiter

If there be such a thing as Jovian life, that is to say, if there are any inhabitants on Jupiter, the following are the advantages they obtain by living on the great planet—advantages so poetically brought into relief at the memorable meeting above alluded to.

(To be continued in the October Issue)

# STATION X

*By G. McLeod Winsor*



Suddenly it stopped as though gripped by some invisible force. The anti-gravitational action was withdrawn, and it fell, as a stone, on the vessel's deck. The result was an explosion of terrific violence.

## What Went Before

**A**LAN MACRAE, simple, uneducated, yet a skilful radio operator, is sent as operator to a secret radio station, operated by the British Government, known as STATION X, on an island in the Pacific. He accepts the offer because it brings him nearer to the day when he and May Treherne, the heroine, can be married. He goes with peculiar forebodings of impending, intangible dangers. Lieut. Wilson, very well educated and very intolerant of Macrae's educational shortcomings, and Ling, the Chinese cook and caretaker, complete the party to remain on the island, and incidentally the latter serves as the "butt" for Lieut. Wilson's ill-temper. Soon Lieut. Wilson and the Chinaman are found lying dead, apparently murdered by each other. Macrae falls under the influence of an inhabitant of Venus, who is known in this story as a "Venerian," and whose voice comes to him over the radio, telling all kinds of interesting things about the inhabitants of Venus, giving him a great deal of scientific information, although Macrae understands nothing of the greater part of it.

Because London has received no answer from Station X for three days, the "Sagitta," with a crew of investigators and relief is despatched to the island and arrives to find Macrae lying on the floor apparently dead, still wearing the ear-set.

The doctor, thinking that Macrae may be suffering from catalepsy rather than that he is dead, takes him back to London on the "Sagitta." Macrae recovers on the boat and tells a weird tale, which, however, coincides perfectly with his shorthand notes of both his report and of the mysterious messages, and with his diary.

When they arrive in London, the government starts an investigation. The plot thickens; a great scientist, Professor Rudge, is called into the consultation; the British cabinet and Navy Department are thrown into utter confusion. Rudge goes to Station X. Hypnotism transmitted from the planet Venus begins to take part in the drama; radio communication with Venus is carried on and the friendly Venerians give warning that Mars intends disaster to the earth. Martians by hypnotism get possession of Macrae's soul and mind and Rudge narrowly escapes the same fate. They even think of killing Macrae, whom they regard now as a Martian, no longer as a human being. He possesses the power of hypnotizing others to be Martians. There is now a personal contest between Macrae and Rudge, and at this point of complication the second instalment ends. The conclusion is here before you and a wonderful climax is reached.

## STATION X

By G. MCLEOD WINSOR

### Part III

#### Mr. Mansfield Alarmed

**T**HE morning after his talk with Professor Rudge Mr. Mansfield was astir before his usual hour, after a bad night. The mystery of Station X would not be banished. He tried to persuade himself that the anxiety he felt was due to the unexplained silence of the station, apart from anything Professor Rudge had told him. He strove to convince himself that the latter's utterances were too wildly extravagant for acceptance.

Long accustomed to listen to extravagant statements, both in the House and elsewhere, he had learnt that, although they may have a certain force for the moment, due to the eloquence with which they have been urged, their effect is brief.

Yet here was a typical example, that, to his surprise, had taken an opposite course. Professor Rudge had spoken with his customary force, so there

was nothing surprising if his narrative had for the moment carried his listener with him. The effect ought gradually to have faded, but it had not.

What was then the special quality in this account that caused it to obtrude itself upon his thoughts? Not its lack of extravagance, he told himself. Why, during the night, had it haunted him?

**T**HE Martian is triumphant. Despite all vigilance, despite all precautions, the Martians have succeeded in capturing a terrestrial warship. The fate of the world now lies in the balance. Panic reigns over the entire world because nothing is impossible to the Martians. Will they take hold of humanity and force it to commit wholesale suicide as they did with the Lunarians? What sort of new and titanic warfare will they wage on the terrestrial trials? And can the distant Venerians now be of any assistance? Or will Professor Rudge discover a way to frustrate the plans of the cunning invaders?

All this and more will be told in the concluding chapters of Station X, and we know that you will not lay the story down until you have read the hair-raising conclusion.

Curiously enough, the more it haunted him the less extravagant it seemed. That characteristic seemed to peel off, and what remained was alarming. It began to dawn upon him that what he had described to himself as extravagant might be better defined as unprecedented, and that the two things are different.

During the hours of darkness Mr. Mansfield made progress toward the truth. He did not, however, make sufficient progress to be prepared to admit it. This morning he had an appointment with the First Sea Lord at the Admiralty, and he had asked Sir John Sarkby, the Home Secretary and his

most intimate friend in the Cabinet, to be also present.

He had already ascertained that it was still impossible to get any reply from Station X.

Too early for the appointment, he strolled in St. Jame's Park, and soon he found his spirits rising in response to the beauty of the morning. Great is the man whose judgment is not at all affected by his physical surroundings. Mr. Mansfield was clever, but not great. He was a strict guardian of his personal dignity, and keenly susceptible to ridicule. He looked at the cheerful sky, at the green of the park, the waterfowl, the chattering sparrows. He asked himself, if, after all, the fears that had oppressed him during the night were not chimerical. The more they looked so to him, the more ill at ease he became, the more distasteful seemed the coming interview.

He tried to convince himself that the sole business in hand was the silence of Station X, and the report from Hughes that had preceded it.

But wriggle as he might he could not deceive himself as to his duty. He must give Professor Rudge's version of the present position at the station, and his opinion of the awful consequences that might follow. And—here was the difficult part—he must admit that he was himself to some extent troubled about it. It was an unpleasant thing to do before a man like Admiral Benson.

Suddenly an idea occurred to him, and he looked at his watch. There would be time. He made for the Mall, and hailed a taxi.

#### A Scotch Scientist

**H**E looked on it as an inspiration that he should have just remembered that Professor McFaden of Edinburgh was now in London. McFaden rivalled Rudge's eminence in the scientific world. Each had his special set of admirers, but practically all regarded them as the two greatest men in their particular sphere. Rudge led in discovery; McFaden was his equal in knowledge, and the more orthodox. There was not supposed to be overmuch love lost between them.

Professor McFaden was surprised to receive so important a visitor just as he was finishing breakfast.

"I hope," said Mansfield, "an old friend will excuse this lack of ceremony; but I want you to come back with me to the Admiralty. Can you manage it?"

"Certainly," said McFaden; "but what's it all about?"

"You know that Rudge discovered a new method of radio of so powerful a nature that it made radio telephony over world-wide distances possible?"

"I am not denying that the thing stands to his credit," said McFaden, speaking with a decided Scotch accent.

"You were one of the very few to whom this method was communicated," said Mansfield. "I myself am ignorant of the method, but that does not matter. It exists, and we hope and believe is not known to any foreign Power. For naval purposes a very powerful installation, far surpassing all others, exists in the Pacific, and Rudge is now there."

"Rudge there!" said McFaden, greatly surprised.

"I knew he was away, but man, why on earth is he wandering the Pacific?"

Mansfield hesitated. "I cannot answer that question now," he said. "I shall have to leave it for the meeting."

"Why do you want me there?" asked McFaden.

"Well," said Mansfield, "the reason is this. We have received a report from Rudge that is astounding beyond all precedent. It requires scientific knowledge to examine it. I want your support. I picture myself speaking of it before Admiral Benson, to whom the reasoning will be simply unintelligible. I am not saying that Rudge is not mistaken. If, when you have heard the report, you say he is, you relieve me of a world of responsibility. What I want to secure is that Rudge shall not be set aside by mere ignorance."

"Well, it's mysterious enough, I'll grant," said McFaden, with a smile, as they walked out into the hall and he picked up his hat and stick. "Let us be off."

#### Views of the Admiralty

**A**RRIVED at the Admiralty, they went to Mr. Mansfield's room. Although it still wanted a few minutes to the appointed hour, the other two men were there.

Mr. Mansfield introduced Professor McFaden, and explained that in consequence of the nature of the communication he had to make, he considered that some one with ability to judge of its scientific value should be present.

"We are here, I believe," said Admiral Benson, "because we have lost touch with Station X, and to decide without further delay"—he glared at Mr. Mansfield and Sir John Sarkby—"what is to be done about it."

"Exactly," began Mr. Mansfield, "and——"

"As it is perfectly obvious," broke in the Admiral, "that the one thing to do is to send and find out what's the matter, our decision should be soon arrived at."

"No doubt," resumed Mr. Mansfield, "and I anticipate that your view will not be disputed. This affair, is, however, complicated with another matter which cannot be so promptly disposed of."

There was a pronounced snort from the Admiral, who looked at his watch. Mr. Mansfield was palpably ill at ease.

"I am afraid," he said, with quiet dignity, "I shall have to claim a certain amount of your time. I have here a report from Professor Rudge as given me by radio from Station X, where he now is."

"And never ought to have been," growled the Admiral. "What business has a schoolman at a naval station?"

The contemptuous tone annoyed Professor McFaden.

"Man," said he, nowise impressed by the Admiral's manner, "do you not know that but for the schoolman, as you call him, the naval station would never have existed?"

Admiral Benson merely growled.

The Home Secretary was beginning to enjoy himself. He liked being amused.

Mr. Mansfield then proceeded to tell the story from the beginning.

An hour had elapsed before he concluded. Ad-

miral Benson showed the greatest impatience, and, as the nature of the subject became apparent to him, interrupted more than once. McFaden sat silent and inscrutable, slowly twirling his thumbs, his eyes on the floor. The Home Secretary seemed interested, but did not volunteer any remark.

"And now gentlemen," Mr. Mansfield concluded, "you know as much of it as I do. I have called this informal meeting because something has to be done at once. The simple question is, whether a cruiser is to be despatched to Station X, or other precautionary measures taken pending further news. I ask you, Professor McFaden, after hearing Professor Rudge's report and knowing the silence that has so strangely ensued, if you think it desirable to do so."

"I see no reason," said McFaden, "for not doing so."

"And I say the boat ought to have been hundreds of miles on her course by now," said Admiral Benson.

"And you?" said Mansfield, turning to the Home Secretary.

"You see," said Sir John Sarkby, with his peculiar smile, "I do not know anything about naval matters!"

"You know precisely as much about them as I do!" said Mansfield.

Admiral Benson's look gave clear expression to his own view of civilian heads of service departments.

"Well, sending another cruiser," said Sir John, "seems the obvious thing to do. I am sorry about poor Rudge."

The meeting broke up with the decision to send a fast cruiser, and it was left in the hands of Admiral Benson to say from where she should be sent.

He detached the powerful battle cruiser *Sea Lion* from the China fleet for the purpose. Whether on account of her armament or her tremendous speed he did not say.

Many of the thousands who passed threw a glance at the building, and above it at the aerials of the mysterious radio. Fortunately none knew that from that installation a fateful message had just flown, or the terrible consequences that were destined to result from it.

Mr. Mansfield left the Admiralty with Professor McFaden. "I don't know why," he said, "but in my heart I am not really quite easy about this. Why are you in favour of sending this cruiser?"

#### A Discussion

"PARTLY because I do not see in any case why a cruiser should not be sent. And I also fear there can be little doubt that Rudge is quite insane on this subject. He always had a weakness for the metaphysical, and this Macrae business hit him on his vulnerable spot. He is now as mad as a hatter, but may not appear so. I know him. He may be quite capable of getting over the naval captain of that cruiser. It looks to me as if he has done so."

"Do you think then," said Mr. Mansfield, "that Captain Evered's silence as well as that of Station X is simply attributable to Rudge's insane influence? What about Macrae's experience?"

"With respect to Macrae," said McFaden, "you were not very clear, but I came to the conclusion that investigation would show that everything could be traced to Rudge. From your first question, I do think so. For with all working parts in duplicate, a radio station is practically immune from such long interruption to the service, as far as the installation is concerned. We have therefore to deal with the personnel, friend or foe. In the absence of war, the foe is eliminated. This brings us to the resident staff, Rudge and his companion, and the cruiser. If you ask who of these is responsible for the interruption, I say, without hesitation, Rudge."

"Your logic," said Mr. Mansfield, "seems unanswerable. Only now be equally convincing as to his insanity, and I shall be eternally grateful to you."

"That," said McFaden, "can only be a matter of opinion."

"Is it not possible," said Mr. Mansfield, "that, though sane, he is being in some way himself deceived?"

#### An Inflexible Scientist

"DECEIVED! Yes," said McFaden, "but only because he is a monomaniac on this subject. On any other he is possibly still sane enough. I will say this for him, although we have not always agreed: there is not a cleverer investigator, or, leaving out his one weakness, a man more difficult to deceive than Rudge."

"Good!" said Mansfield. "Your position is now clear to me. You believe that Station X, together with the *Sagitta*, is now in the hands of a monomaniac, and for that reason advised the despatch of another cruiser."

"Precisely," said McFaden; "and now I will ask you to lend me the whole dossier of the Macrae affair. Your exposition of it could not always be quite followed. I have already said what I expect to find."

"And if you do not find it?"

"Then," said McFaden, "I will recall what I have said of friend Rudge."

"But," said Mr. Mansfield, "it will be too late to recall the cruiser!"

"Not at all," said the cool Scot. "It will be a good few hours before she is beyond the radio."

"I could not contemplate the cruiser's recall now it is well under way," said Mr. Mansfield.

"And burning coal, no doubt, at a great rate," said McFaden, quite coolly. "A thousand to one she is right. But I have it in mind to study the papers, which I shall do at once, and see you again if my opinion of it is changed."

"Would it not have been better," said Mr. Mansfield, rather stiffly, "to have studied the documents before the order was given?"

"The chance is so very small," said McFaden. "There is just a point or two that wants clearing up. No doubt they will be clear enough when I can give the matter quiet attention. It difficult to give anything quiet attention with that stormy petrel Benson within hail."

Mr. Mansfield thought that perhaps McFaden was a little frightened of Admiral Benson, as he was himself. He assumed that the recall of the *Sea Lion* was very unlikely. He knew that warships of that

description were not sent to and fro while a professor studied a bundle of documents. He saw, however, that McFaden was not to be in the least impressed by such a consideration.

The papers were given to Professor McFaden, and by eleven o'clock he was busily engaged with them in his own study.

#### A Solution of a Puzzling Case

**F**EELING convinced now that McFaden's solution was the correct one, that Admiral Benson was placated for the moment and that the right thing had been done, Mr. Mansfield sighed his relief and gave himself up to his secretary and the day's correspondence.

At three o'clock in the afternoon he was surprised to hear that Professor McFaden was asking for an interview.

"Show him up immediately," he told the attendant.

Professor McFaden was nearer appearing excited than ever before in his life. He plunged at once into his subject.

"I have been very carefully through these papers," he said. "I tell you at once, the thing amazes me. My theory would explain Rudge fine, but man, it doesn't explain Macrae. The point you failed to make clear and left open is that before Macrae's account was written, he and Rudge had not met, nor did they know of one another's existence. That alters the whole aspect of the evidence. The assumption on which my reasoning was based goes from under me."

"Have you reversed your opinion, then?" asked Mr. Mansfield.

"I will tell you the opinion I have now formed. Meanwhile, I take it there is plenty of time to recall the *Sea Lion*, should you desire it."

"I shall want to hear remarkably solid reasons first," said the First Lord. Nevertheless, he rang the bell and sent to inquire how long Hong-Kong would be in touch by wireless with that warship.

He was told there would still be several hours.

#### Prolongation of the Discussion

"**I** WILL again ask you the question I put to you this morning," said Mr. Mansfield. "Do you believe that there has been interplanetary communication?"

"When you asked me that question before," said McFaden, "I was convinced that on probing the affair I should find it rested on Rudge's evidence, and I said, No. I have now probed it. I find that Rudge can be eliminated, and I say, I do not know!"

"On what do you rest your opinions now?"

"On what happened to the operator, and the circumstances in which it happened. Scientifically the evidence is very strong."

"I may gather then," said Mr. Mansfield, "that you do not consider a radio signal from a neighbouring planet scientifically impossible?"

"Hitherto I have always held it to be practically impossible," said McFaden.

"I said scientifically," persisted Mr. Mansfield.

"Seeing that the required medium for it undoubtedly exists all the way, one might hesitate at such a statement."

"Now tell me what evidence you have seen in the

documents that I did not mention," said Mr. Mansfield, leaning forward, the morning's anxiety redoubled.

"I have already said there is the fact that Macrae's papers were all written before he met Rudge. For the rest, I will deal with two points. First, Macrae gave what he said was the Venerian's description of a telescope. As we are dealing only with evidence, we need say nothing of its merits or demerits. We have the fact that it describes an instrument such as does not exist on earth, and the description requires scientific knowledge that Macrae could not possibly possess."

"That," said Mr. Mansfield, "is certainly strong evidence."

"The second point," said McFaden, "is even stronger. A date was put in his head, for his future return to the island. I am quite satisfied that neither Rudge nor any man else gave him that date. It turns out to be the exact day of the conjunction of Mars. This does not happen so often that it could be hit on by chance. It would be the day chosen according to his story, and only according to that. Apart from it, the date would have no meaning. Can you not see that such evidence is significant?"

#### A Conclusion

"**I**T IS irresistible," cried Mr. Mansfield, "and includes not only the Venerian, but the Martian also!"

"Logically, it does," said McFaden.

"Then do you still think the *Sea Lion* ought to have been sent before we learn the position at Station X?"

"There is still nothing before us to indicate any danger in sending the cruiser to the station," said McFaden. "It might perhaps have been left awhile."

Professor McFaden was half regretful that he had given such unqualified acquiescence to the *Sea Lion's* despatch, but he refrained from saying so.

"Benson would make an awful row," mused Mr. Mansfield. For a minute or two he was undecided. At length he said, "I have made up my mind what to do. To-morrow there will be a Cabinet Council. The decision shall be left to it. I will send instructions to the *Sea Lion* to go only so far on her way as will not take her out of touch with Hong-Kong, and await orders there."

This he ordered to be done, in spite of Admiral Benson's protests. Later in the afternoon a cable was received from Hong-Kong that something was wrong with the radio, and no message could be sent to the *Sea Lion* or anywhere else.

#### The Admiralty's Radio

**A**T the same time his secretary mentioned that there was something wrong with the Admiralty radio. Struck by this coincidence, Mr. Mansfield went himself to investigate, and was told that no message could be heard in consequence of what appeared to be some new kind of electric storm.

He even put on the receivers himself, and heard a continuous babel of inarticulate sounds—loud, distracting, emanating from no one could tell where. It rendered anything in the nature of radio telephony, or even ordinary radio telegraphy quite impossible.

## CHAPTER XVI

## The Prime Minister Capitulates

**T**HAT evening Mr. Mansfield called on his friend the Home Secretary.

"This thing is getting too much for me, Sarkby," he said. "I begin to think that events are moving fast, but what they are, why they are, or who is pulling the strings and from where, are questions to which there seems no present answers."

"You mean the Rudge business," said Sir John.

"Yes; but since the meeting McFaden has read all the details of the affair from the beginning. I had to leave out many details this morning, and it seems that among them were things that were important as evidence. McFaden is not the confident man he was. He came to me immediately after he had digested all the facts."

"What about the *Sea Lion*?" asked Sarkby, quickly.

"Yes: among other things he seemed more than willing for her to be recalled, although not professing to see any particular reason for it."

"What in particular weighs on your mind?"

"It's the cumulative effect of the evidences that there may be truth in what Rudge said. I was at the time impressed by him, but reflection enabled me partially to throw off the effect, owing to the unprecedented nature of his statements."

"Well," said Sarkby, "what alters that?"

## Cabinet Leaks

"**T**HIS," said Mansfield—"that the *Sagitta* is lost to us, and Station X inexplicably silent, are facts, and they seem to strengthen Rudge's story. Now, on the evidence, of which he must be a far better judge than you or I, even McFaden is on the wriggle. And on the top of it, there is this magnetic radio storm, or whatever it is. I begin to think it is all connected."

"Well, for my part," said Sarkby, lighting a cigar, "I am not taking any of this story. The whole thing is curious, I admit. But see what miraculous coincidences do happen. There will come along some simple explanation of it all. Don't let it get on your nerves, old chap. Let's talk about it tomorrow at the Cabinet Meeting, and so get rid of individual responsibility."

"But I would rather, if it could have been avoided, that it didn't come before the Cabinet."

"Why not?"

"I was going to bring it up, more particularly as to the *Sea Lion* going to Station X or not. That being taken out of our hands, what is the good? It ought to be kept secret for the present."

"Blasphemer! Do you insinuate that secret things may not come before the whole Cabinet?" said Sir John, with twinkling eyes.

"You know perfectly well, Sarkby," said Mansfield, "there are one or two among us before whom it would not be safe to mention that the cat had kittens, if it were important to keep it from the papers."

"Well, Mansfield, go your way," said Sarkby.

"My way is now straight to No. 10," said Mansfield. "I will explain the thing as well as I can to the Chief, and try and persuade him to have it up

before a Committee of the Cabinet only. I hope I shall find him in."

"Hope you will," said Sir John; and so it came about that the matter of Station X was not brought before the Cabinet.

In the course of the day Admiral Benson woke a few echoes at the Admiralty. Some one, possibly with a certain humor, suggested to him that he should try what he could do at the radio, as nobody else could make himself heard. He took the suggestion, went up to the radio room, and put on the receivers.

## No More Radio Communication

**B**UT did not open his mouth. His face became a study of surprise and bewilderment. Presently he gently put the receivers on the table.

"Well!" he said. "Of all the unqualified—" Admiral Benson's idiom was notorious at the Admiralty.

In the afternoon an informal meeting took place, at the Prime Minister's, and the Station X affair was fully discussed. The Prime Minister's attitude seemed to coincide with that of the Home Secretary, without being quite so positive. He thought the present mystery would soon clear itself up, either by the recovery of the radio and news from Station X, or the arrival of the *Sagitta* somewhere with a satisfactory explanation, probably a very simple one.

Mr. Mansfield saw that it would be useless for him to say more, and it was therefore decided with apparent unanimity to let things take their course until something fresh happened, and in view of the secrecy of the station, on no account to allow any alarmist story to get to the Press.

It was easy to make these plans, but when several people are concerned it is easy for whispers to get about. So far as the "radio storm," as it somehow got to be called, was concerned, there was of course nothing secret about that. The state of things was soon ascertained to be world-wide. Radio communication had entirely ceased.

## Profitless Attempts at Explanation

**I**T became the general topic of conversation. Every day columns of the papers were full of it. When it was found, as day followed day, that the phenomenon continued, the *savants* of all nations took up the investigation by every means that their science could suggest.

Meanwhile, in letters to the Press, a great many fantastic explanations were put before a bewildered public. Most of the amateurs decided that the cause was electric. The less they knew about electricity the more they used that hard-worked word. One man suggested that it was a manifestation of the Almighty's anger with the world "for its excessive secularity."

It was suggested that any peculiar behaviour of the aurora in polar regions should be studied. Even the zodiacal light was not unsuspected. One pessimist surmised that it indicated a disturbance of the ether by some cometary or other body of high electric charge approaching from outer space with frightful speed, coming, very possibly, straight for us, and that the escape of our globe in the circumstances was problematical indeed.

His idea caused some amusement, but if he had been capable of interpreting his dream in terms of the spirit instead of terms of matter, he would not have been so very wide of the truth.

While the public was thus occupied with conjecture, there were two groups deeply interested, the scientists and the politicians. The latter in more than one country were asking themselves if this new thing could be of other than human origin, and if of human origin, what it might portend.

#### The International Aspect

THE situation in Europe was delicate, and such a thing as the universal interruption of radio communication caused suspicion. Each of the Great Powers was suspected by the others. A great deal of secret service money was spent without result. Still the days passed during which there was not one moment of the twenty-four hours when the radio receivers were not full of this extraordinary and meaningless din.

The scientific world was entreated by the Governments to spare no labor and no expense in their efforts to find out the cause—how, where, and if possible, why, it was being done.

Whether it was because the British Empire is wider flung than others, or because with envious rivals we are supposed to be masters in the art of grab, it became whispered that England was emitting this impediment to communication for some sinister reason of her own.

The echo of this soon found its way to the House of Commons, and was persistently voiced by the peculiar people there whose delight it is to snipe the front bench.

The Prime Minister for the most part answered the questions, and, being a master of sarcasm, gave his questioners full measure in his replies. But secretly he was uneasy. He knew the Government was anything but firmly seated, that a very little additional unpopularity in the House would topple it over; that many members, while maintaining silence, were suspecting it of being up to some folly respecting this mystery.

This was aggravated by Professor Rudge's name becoming mixed up with it. All the world at once wanted to hear him on the subject, and, needless to say, all the papers at once published the fact that he could not be found.

The Prime Minister felt the awkwardness of his very obvious dilemma. He could neither tell what he knew of Rudge's absence without being made to tell much that he was determined not to tell, nor produce him.

#### Professor Rudge Again

IT was a very short time after that Professor Rudge relieved the tension of the situation by producing himself, and things began to move swiftly. Before any one knew where they were, the *Sagitta* was at Falmouth, and Professor Rudge and Captain Evered in London.

The Professor broke his journey for a few hours at Plymouth to see May Treherne. On his journey home he had been wondering how he would manage about secretarial assistance. He knew of no one just fitted for the occasion. The secrecy imposed

seemed of itself sufficient to preclude any idea of a confidant. Suddenly Miss Treherne's name occurred to him as an inspiration. He recalled her personality, her brisk cheerfulness, her energy and quick intelligence, her courage and common sense. He remembered how devoted she had been to Macrae.

He reflected that it might be put to his door that Macrae was lost to her, for if it had not been for him, Macrae would never have had the opportunity of returning to Station X.

Macrae was doubtless "dead," as we use the word, pushed before his time beyond the veil, while strange to say, his body, the mortal part, was not dead, but animated by a fierce and powerful spirit now fighting, not against a man, but against humanity.

#### May Traherne and Professor Rudge

PROFESSOR RUDGE found May Treherne at her old address. She, too, it appeared, was ready to reproach herself for the efforts she had made to infuse enthusiasm and ambition into Macrae, when his own prophetic warning of coming disaster held him back.

She listened to all Professor Rudge felt he could tell her, accepted his proposal, gasped a little at the handsome salary he suggested, and walked with him to the station to catch the London mail, promising to follow in a day or two.

On Professor Rudge's arrival in town he went straight to his house in Great Queen Street, where he lived with a sister, considerably his senior, and impressed with the conviction that her sole mission in life was to look after her wonderful brother. A simple, kindly soul, thoroughly competent to fill the office she had assumed, she would herself have laughed at the accusation of being possessed of intellect.

Professor Rudge went home, but he had no thought of rest. Miss Rudge was troubled at the signs of worry that she instantly detected in him, but she waited with feminine tact to learn what the trouble was. She seized upon the subject of his clothes and wanted to know how he dared scandalize the neighbourhood by appearing in such clothes, such linen.

Within an hour he escaped, "decent and respectable," he was told, and certainly with the best meal he had eaten since he had left home.

Calling a taxi, he drove straight to Mr. Mansfield's house.

Mr. Mansfield was no less pleased than surprised when Professor Rudge was announced. At last he would learn something to lighten the darkness in which he seemed to be groping. At last there was some one to whom he could refer his colleagues, and on whom he might throw responsibility.

"This is a great surprise," he said, as the Professor entered. "I did not anticipate seeing you to-day. When the *Sagitta* was signalled I was told you were on board."

"Have you seen Captain Evered?" asked Rudge.

"Not yet," was the reply. "He is no doubt finding out what is going to happen to him. Benson is furious with all things, from etheric interruptions to recalcitrant captains. It will mean court-martial and half-pay for Evered, I fear."

"We shall see," said Professor Rudge quietly. "I have come here at once, Mr. Mansfield, because the matter before us and the world must suffer no delay. There are details of the position here of which I am ignorant, and on which you can enlighten me."

"Everything I know is quite at your disposal, but I feel more in need of enlightenment myself than qualified to spread it," said Mansfield, with a smile.

"I know, of course, about the interruption to the radio," said Rudge; "but, partly in consequence of that, I know nothing else—the Government's opinion, popular information, or measures taken or proposed regarding the affair of Station X. I want you to bring me up to date in these things."

Mr. Mansfield proceeded to enlighten his visitor as to the occurrences in London and Europe since Station X had been cut off from the rest of the world.

Professor Rudge was not surprised at what he heard; he had expected it. It proved to him that any chance that remained for mankind on this planet depended on himself and, under Providence, himself alone.

"When," he asked, "will be the next Cabinet Council?"

"This day week," said Mr. Mansfield.

"There must," said Rudge, "be one to-morrow morning early."

"There will certainly not be a meeting of the Cabinet to-morrow, early or late," was the dry official rejoinder. Mr. Mansfield did not like Professor Rudge's "must," or his manner.

The Professor looked at Mr. Mansfield for a moment without speaking.

Interviews with the First Lord and the Prime Minister

"**WILL** you," he asked, "come with me now to see the Prime Minister?"

"I do not think Lord Saxville would be able to receive you at present," was the reply.

"He will receive me all right," said Professor Rudge grimly.

Mr. Mansfield stiffened still more.

"I regret," he said, "that I am unable to go with you just at present."

"Well, good-bye, Mr. Mansfield," said Professor Rudge, with imperturbable good humour, as he rose to go. "Thank you for all the information you have given me. I wanted to know just how matters were before seeing Lord Saxville. We shall meet again to-morrow."

After Professor Rudge had taken his leave, Mr. Mansfield remembered the many things he had wanted to ask him about, and that he had learnt nothing.

If Professor Rudge's interview with the First Lord had been lacking in sympathy, that with the Prime Minister was stormy.

No one had ever seen the Professor in this humour before. To-day he was not stopping to plead or to explain: he was a battering ram.

At No. 10 he was at first refused an interview. Without wasting time he wrote a note and asked to have it taken to Lord Saxville. His name at least procured this service. The note did the rest.

He was shown into the waiting-room, from which a few minutes later he was conducted to a room

where Lord Saxville was seated at a table covered with papers.

"So, Mr. Rudge," began the Prime Minister, in an even voice, "you threaten me!"

#### Friction

"**I DARE** anything at present," said Professor Rudge, looking straight at Lord Saxville. "There is too much at stake to-day for the ordinary rules to obtain. I have learnt from Mr. Mansfield that you and the Government know my opinion respecting the present position at Station X and its danger. I know that that opinion is not generally accepted among you. It is vital that it should be, and measures must be taken without delay. I ask that the Cabinet should meet to-morrow, early, and that Captain Evered, of the *Sagitta*, and the most eminent men of science now in London, or within reach, shall be present; furthermore, that I shall have an opportunity of laying my opinion before the meeting, with all the facts, vouchers, evidence that I shall be able to produce in support of it."

"I'm afraid it is impossible," said Lord Saxville coldly.

"Then you refuse?" said Professor Rudge.

"I'm afraid it is impossible."

"You have read my note?" asked the Professor.

"I have."

"And still you refuse?"

"I repeat your request is impossible," said Lord Saxville. "I prefer not to refer to the threat in your note."

"Will the meeting be held?" persisted the Professor.

"It will certainly not!"

"Then my threat, as you describe it, will be carried out," said Professor Rudge.

Assuming his haughtiest attitude, the Prime Minister intimated that the interview was ended, and left the room.

Feeling sanguine about the meeting on the morrow, Professor Rudge left Downing Street. He knew Lord Saxville's fear of the Press, and Professor Rudge's threat of publicity had impressed him. He was not mistaken.

#### Meeting of the Scientists

**H**E had been at home about three hours when a messenger came from Mr. Mansfield to say that the Prime Minister had communicated with him on the subject in which Professor Rudge was interested, and that while a Cabinet Meeting in the ordinary sense could not be held to-morrow, it was possible that an informal meeting of some members of the Government might take place, to hear Professor Rudge; and would he now say who were the men of science he desired should be present, so that they might be communicated with.

"So!" thought Rudge. "My lord capitulates. A bitter pill!"

With infinite tact, he wrote a letter of thanks to Lord Saxville, at the same time apologizing for the rather unceremonious manner in which he had descended upon him, and any heat he might have displayed.

The names on the list that Professor Rudge prepared were not chosen because they were men with whom he was in most general agreement, or men

## AMAZING STORIES

that he thought he could most easily influence. His worst enemy could not deny that it would have been impossible to find six more distinguished scientists in the country. Later, this fact greatly impressed Lord Saxville.

They were all personally known to Professor Rudge, and as, next day, he entered the room where the meeting was to be held, he noticed that they were all present. Knowing well that a certain branch of his past investigations had brought him some sharp criticism in other days, he could not help an inward smile. "They think they have me now!" he thought.

The Prime Minister was not the first to speak. Sir John Sarkby had evidently been delegated to introduce the subject of the meeting and act as the principal speaker.

In his suavest manner he explained that "Professor Rudge had requested the Government to give him an opportunity of bringing before them and his brother scientists a subject that he considered of the greatest and most urgent importance in regard to the interests of the State, and in fact, the world."

"The Prime Minister," he continued, evidently addressing his remarks to the scientists present, "and some other members of the Cabinet had already heard an outline of the subject to be dealt with. While they did not profess to follow Professor Rudge in all the opinions he advanced, yet in view of the eminence of the man and the importance of the subject, if he should be right, Lord Saxville, with characteristic open-mindedness and liberality, had decided that Professor Rudge should have his opportunity to place before them his opinions on certain recent events, and the grounds on which he held those opinions. It was gratifying to him and his colleagues to see present six other men in the first rank of science ready to support a brother savant so far"—Sir John Sarkby was especially suave here, and his voice rose half a note—"as they were able to endorse his conclusions."

## Rudge's Speech

PROFESSOR RUDGE was a clear thinker gifted with the faculty of lucid exposition. During his voyage to England he had prepared himself for this moment. Every voucher for what he was about to say was to his hand. Not the smallest point that could bear for or against his argument would be allowed to escape his attention.

As he rose he was fully conscious of the keen intellects present and of the fact that if there was the smallest flaw in his armour of proof, it would be seized on with avidity. He knew that these six were not only the most critical, competent and dangerous, but actually, in the last resort, the only part of his audience that mattered. He knew that if he carried them, he carried the whole world of science, and with that backing he could defy any Government.

To these therefore he mentally addressed himself and cast the politician temporarily from his thoughts. First, however, he paid a tribute to Lord Saxville's promptness in according to what many men in his position would have regarded as an unreasonable request. Lord Saxville bowed slightly in acknowledgment of this peace-offering.

In the course of his speech Professor Rudge read many papers, with the exception of Macrae's diary, mostly official; but it was chiefly with his extempore eloquence that for nearly three hours he held his audience. All remained tensely eager to hear every word, even where the greater number of them were, through lack of knowledge, out of their depth and unable to follow the argument.

When he finally sat down there was a minute's silence, during which the politicians present, without consulting each other, all felt that it would be best to wait for a lead from the scientific bench.

## McFaden's Tribute

PROFESSOR McFADEN was the first to speak. "Rudge, man," he said, from where he sat, and there was genuine admiration in the Scotchman's tone, "we all knew you had the gift of speech, but you have surpassed yourself. And I'm not surprised at it, for ye certainly had the greatest theme any professor ever dealt with."

"Thank you, McFaden," said Professor Rudge, speaking a trifle hoarsely after his effort, "but let us not waste a moment over compliment. I want judgment."

"No doubt," said the Scot, "and ye shall have it. For the present we all doubtless want to consider the matter. I can say it wears a very different aspect to what it did before I heard you."

He rose to his feet, and evidently considered that so far as he was concerned the meeting was over. It was clear that what a mere Prime Minister might have to say had little interest for him.

Lord Saxville, however, while seeing that little more could be done at the moment, had a word to say before the meeting broke up.

"Professor Rudge," he said, "I wish to say to you, in the presence of all here, that after hearing you I think you were quite justified in desiring this meeting, and to some extent"—there was a just perceptible hesitation between his words that indicated they were being chosen with some care—"in the steps you took to procure it. Without expressing any opinion before further consultation, and especially before learning the views of these gentlemen present, who are best qualified to judge of its many scientific points, I candidly admit that you now appear to me to have a much stronger case than I had dreamt of. For any abruptness in my manner at our last interview I express my regret."

And so the meeting broke up.

## CHAPTER XVII

## Professor Rudge's Ultimatum

THROUGH the action of Admiral Benson, Captain Evered was not present at the meeting to hear Professor Rudge, who had desired his presence so that he might be there to answer questions on matters of fact within his knowledge. His absence made no difference, however, as the need of additional testimony was not felt by any one.

As soon as the meeting was over, Professor Rudge joined Mr. Mansfield and spoke of the position of Captain Evered.

"What," he added, "is now going to be done?"

"A court-martial," said Mansfield. "You must see that is inevitable. Benson wants his head on a charger at once. I am afraid his connection with the Service is over. If he is put on half-pay he will be extremely lucky."

"Of course," said Professor Rudge, "you will readily understand that holding the opinion I do, I wish to save Captain Evered from what must appear to me an act of great injustice. So far from thinking him worthy of punishment, I am convinced that his action alone saved the situation in so far as it has been saved, and but for him we should not be here now."

"Of course I quite see that," said Mr. Mansfield.

"If, after hearing me," said Rudge, "you now hold my views, you must feel the same. Whether that is the case or not, I do not ask, but I do ask you as First Lord to stop this court-martial, at least for the present."

"You see," said Mr. Mansfield, "there are regular rules for all such cases. My connection with either of the services is short, and I know very little of such procedures. Of course I can see that Evered's breach is glaring. And then Benson is such an unpleasant man to interfere with."

"But if it were a matter of policy?"

"That," said Mr. Mansfield, "would be a different matter. Then Benson's wishes could be set aside."

#### A Decision Is Imperative

"WELL," said Rudge, "I consider it is. My statement is now before you and the other members of the Government, and a decision on it one way or the other must be come to without delay. Is it policy to hold a court-martial on Evered while the question whether his action was necessary or not is *sub judice*? And remember that the Government decision is not the final decision; that time alone will show—show very soon, I greatly fear. What I ask therefore is that the court-martial should be held over, and Evered's services retained, until his judges will have solid grounds for their decision."

"There is great point to your argument certainly," said Mr. Mansfield, in a hesitating way.

"Put it before Lord Saxville," said Professor Rudge, "and say that it is my earnest request. Say that Evered acted under my advice, and that I will stop at nothing to defend him. Be sure you say that."

Mansfield was somewhat behind the scenes. He smiled and promised.

#### Captain Evered of the "Sagitta"

As a result Captain Evered was placed under an "open arrest," retaining for the time his post on the *Sagitta*.

The members of the Government evidently held a private meeting after hearing Professor Rudge, for before the day was out each of the scientists received a request to draw up, as soon as possible—the following morning was suggested—a written statement of his opinion on the subject of Professor Rudge's statement.

The scientists also had their meeting, the result of which was that one gave it as his opinion that

Professor Rudge was deluded in some way not clear, admitting that it had been in circumstances and through a curious sequence of events, that almost excused him.

One declined to express an opinion one way or the other until the present state of the radio, or rather, the cause of it, had been solved, giving it as his opinion that if Professor Rudge was correct the clamour on the radio would be found connected with it, and therefore that the first thing to do before accepting hypotheses as facts, was to solve that mystery.

The other four, and they were those who were distinguished for common sense as well as science, considered that Professor Rudge had made out a sufficient case to justify the Government in taking instant action as though its truth were uncontested. Their argument was that absolute proof, as the phrase is used in science, was not necessary to their conclusion, for when so much was at stake, action for safety was clearly indicated.

After his efforts Professor Rudge went home feeling the inevitable reaction. Every bodily comfort that affection could suggest was lavished upon him, but he wanted something more. It was one of those times when even the stoutest and most self-reliant natures feel the need of some sympathetic soul that can understand and encourage.

He knew of none. The secrecy imposed on him seemed in itself sufficient to preclude any idea of a confidant. Perhaps it was that thought that brought to his mind one who already knew much of the matter and who could certainly be trusted with the remainder—May Treherne.

To-morrow she would be under his roof. The thought somehow cheered and comforted him. He felt it would be good to have some one, not alone for the purpose of relieving him of much clerical work, but to whom he could talk on matters about which to others his lips were sealed.

Feeling relieved, his courage re-asserted itself, and he went to his laboratory.

An idea had occurred to him. He had a small radio installation at his house for experimental purposes, and at this, with receivers on, he sat and listened. The radio storm was still going on. As unintelligible as ever, it seemed nevertheless to have a new interest for him. The investigation he was engaged on lasted for many hours. It was almost dawn when he ultimately retired, and his first act on waking was to return to his laboratory. At length he seemed satisfied.

In the morning the Prime Minister and his colleagues had the six reports before them, and a very short interchange of views showed Lord Saxville that there would be trouble from the divergence of views within the Cabinet. Partly because he could not but be influenced by the majority of the reports, and no doubt partly because he saw the party danger of delay, he decided that the matter should be promptly dealt with. He asked the more important members to meet him at the Admiralty in two hours' time for a further talk with Professor Rudge and the other six scientists.

## Views of the Scientists

**A**T this meeting Lord Saxville himself opened the proceedings.

"Gentlemen," he said, addressing himself directly to Professor Rudge and his confreres, "since we met yesterday we have received the reports you have sent us on the Martian danger. One of you declines to accept it; Professor Stenham, of Oxford, wants further evidence on a certain point that he thinks has relation to it; but the other four strongly advise immediate action on such evidence as we already possess. In face of such a majority, to remain inactive is impossible.

"The primary purpose of this meeting is therefore not to decide if we shall act, but to receive your advice as to what course that action should take. It is not an ordinary matter, and, for its efficient handling, it is evident that the most up-to-date knowledge on subjects which active politicians have, I fear, little time to study, is indispensable.

"I may doubtless take it that action means taking measures for the destruction of a being now on the island known as Station X.

"The destruction of a man on that island, or any number of men, would be a simple matter, but the kernel of the whole affair before us is the assertion of Professor Rudge that this being is not a man. He tells us he is a Martian, and informs us that his powers are so vastly superhuman that a single error in our measures would inevitably be fatal, and that every hour's delay is dangerous.

"Tell us, then, gentlemen, before we go further, what, on the supposition that Professor Rudge is right, are the measures you advise."

"Saxville," whispered the Home Secretary and would-be Prime Minister, to the colleague sitting next him, "is supposed to be addressing himself solely to the scientists, but you will notice how adroitly he is endeavouring to force our hands with his 'primary purpose of this meeting.' Like Mansfield, he is getting under the influence of this Rudge."

"Perhaps Rudge is himself the Martian," laughed the other.

"Gad," said the Home Secretary, "it looks like it."

Meanwhile Professor Rudge had begun to speak.

"Of the reports to which Lord Saxville has alluded, it is an immense relief to me to find that four are everything I could ask, and that it is intended to act in accordance with them.

"I now wish to refer to one of the other reports, that of my friend Professor Stenham, because the point it raises is a very reasonable one, and because I believe I have found the answer to it. He refers to the present interruption to radio communication. It was a very shrewd suggestion that this was related to the Martian invasion, and it struck me so yesterday. I have spent the night on it.

"I have an instrument in my laboratory, of my own invention, which I had intended to hand to the world at the next meeting of the Royal Society. With this it is an easy matter to detect at any moment the direction and length of the Hertzian waves on which wireless depends.

"I have spent over twelve hours in taking observations, and my first showed that all the etheric

waves came from the same direction. I had anticipated that, having the idea that they perhaps came from Station X. But an observation taken one hour later showed that they all came from a new direction. This seemed inexplicable, for certainly Station X had not moved. Every succeeding observation showed further divergence. At the end of twelve hours their direction was exactly opposite to when I started.

## Venus in Aries

**T**HAT gave me the clue. Following it, I soon found that although the line of direction made a constantly changing angle with the horizon, it pointed to a fixed point in space. The point is in Aries. I need not remind my *confreres* here that at present Venus is in Aries!"

The politicians present did not seem at once to see the drift of this, but among the scientists there was a sudden movement of the keenest interest. McFaden banged his right fist into his left palm.

"Ma conscience, he's got it!" he cried.

"May I," said Lord Saxville, with a smile "ask what it is that Professor Rudge has got?"

"The explanation," said Professor Rudge, "is that the Venerians are undoubtedly making this etheric disturbance. I am the only man now on earth rendered capable of hearing their voices, by the wonderful *rappor*t they can establish and for that a Station X installation would be required; but they have found a means of hurling into space this continuous blast of etheric impulses. They are of every possible wave-length that can give rise to sound in our instruments. Hence the impossibility of our radio stations inter-communicating."

"What is their motive?" said Lord Saxville.

"In my opinion," said Rudge, "it clearly indicates that the Venerians have seen either that the Martian is reconstructing or has reconstructed the installation of Station X, or that he has escaped or will escape from the island. They are doing this to prevent his communicating with Mars or with ourselves by radio, so that we may for a longer time have him alone to deal with, and a better chance of victory in consequence."

"That," said McFaden, "is so."

Professor Stenham rose and said, "in face of this discovery I desire my report to be amended to concur with those of my four friends."

The sixth man looked at the Home Secretary. He appeared unhappy, but did not speak. What Sir John Sarkby really thought about the matter was only known to himself, but his actions proved him determined to work solely for the furtherance of his personal ends.

"With the powerful alliance of the learned Professor's celestial friends," he said, quietly, "we shall now have ample time to consider our measures. Personally, I very much deprecate any precipitate action."

"We can discuss that," said Lord Saxville, "after this meeting."

"So far as deciding on a definite line of action is concerned," said Professor Rudge, "your decision, gentlemen, I fear, must be taken now."

Lord Saxville knit his brows.

"I object," said Sir John Sarkby, "to the use of

the word 'must' from any man holding no office whatever."

#### Professor Rudge's "Must"

"IT is not I," said Professor Rudge; "it is the emergency that imposes the 'must.'"

"That is for the Government to judge."

"It is but slightly altering Lord Saxville's own words," said Professor Rudge, "if I say it is rather, in this instance, for science to judge, and for the Government to act."

"And if our action," said the Home Secretary, "does not meet with your full approval——"

"If your decision does not meet with the full approval of myself and my colleagues," said Rudge, in firm and level tones, "and if that decision is not taken now, my measures are already complete for the whole matter, before this day is out, to be laid as fully before the French, German, Italian, United States and Japanese Governments as it is now before yourselves, and at the same time," he continued, looking straight at the Prime Minister, "in the fullest detail given to the Press of the world."

Lord Saxville knew that Professor Rudge was in a position to carry out his threat. He had been informed that he was a wealthy man and was spending money freely; that since he had landed there were constant emissaries between him and Paris. There was also a frequent exchange of code telegrams.

Sir John Sarkby's obvious desire was to sow dissension among the Cabinet in order to serve the ends he had in view.

Lord Saxville was already half convinced that Professor Rudge was right. He knew also that there was a section of the Cabinet, headed by the Home Secretary, that did not share this view. The situation was full of difficulties and potential complications.

It was agreed that instructions should be given to the Admiralty to detach a portion of the China fleet for the purpose of reinforcing the *Sea Lion* and effectually surrounding and preventing intercourse with Station X, and with the use of observation balloons and aeroplanes, destroying by bombardment from a distance, any one visible on the island. These vessels were to remain at their posts until the arrival of Professor Rudge, and then to be guided by his advice and direction.

These directions were given as soon as the meeting was over, and Professor Rudge was satisfied that all that could be done at the moment had been done.

Immediately after the meeting the Home Secretary buttonholed Mr. Mansfield as the man responsible for movements of the fleet, to feel his way with him, but found that the First Lord was solid for the Prime Minister.

He then got together the other members of the Government that were of his cabal, with Admiral Benson and the one objector among the scientists, a man who was selling his conscience and prostituting his knowledge, and they held a consultation among themselves.

While they professed not to believe in the Martian, they were more than willing to make use of him for the purpose of the political rearrangement they desired.

Several schemes for doing so were brought forward and debated, but the one finally adopted was startling in its boldness.

"Let us," said the Home Secretary, "take Rudge at his word and show him that things will not pan out as he thinks. He will be on the high seas, and we shall have a clear field. Let us, without ourselves appearing, see to it that the Press get hold of the story, and that through it the public get it in its most ludicrous aspects. In this way it will be possible to smother the whole thing, Saxville included, with ridicule."

Once convinced that Professor Rudge might well be right, Lord Saxville decided to let him have his own way.

#### Miss Rudge Approves

THE *Sagitta*, with Captain Evered still in command, was to take Professor Rudge back to Station X for what he supposed was going to be his second and final round with his deadly foe.

It was sufficiently evident that no court could now punish Captain Evered for having done what a fleet was being despatched to do over again if necessary. He was released from open arrest, to the scandal of Admiral Benson. Furthermore, Captain Evered was made Commodore in command of the operations against the Martian.

On returning to his home Professor Rudge found that May Treherne had arrived, for which he was thankful.

"Stanley," said Miss Rudge dryly, as he entered, "I approve of your taste in private secretaries," and for some reason Professor Rudge felt himself flushing.

"I felt sure you would," he said, at length. "She is certain to do her best, and she is very capable."

"She is very bright," said Miss Rudge, "and remarkably pretty."

"I am glad to think you'll get on together," said Rudge.

"So am I," was the response. "I was thinking of your future. Girls are very insidious."

"I can't imagine what you're talking about," was the Professor's response; "but listen. I am leaving England again at once, and I shall be away for a considerable time. I hope you'll make Miss Treherne feel at home here."

And Miss Rudge promised with alacrity.

Calling May Treherne into his laboratory later, where he knew there could be no interruption, Professor Rudge told her what had happened. She was amazed at what she heard, for beyond the short cable message announcing Macrae's death, she was ignorant of recent developments. She listened without interruption. With chin on palm she sat, and her eyes, with dilated pupils, watched the speaker, as she drank in the facts. Tears once had to be brushed away, but her attention did not wander.

"And now, Miss Treherne," said Professor Rudge, after he had finished, "I want you to take up your duties here, and it will have to be in my absence."

"You are going away at once?" she asked.

"Yes," he said, "and your presence here is a great relief to me. Some one who will be watchful and loyal to my view may be required here while I am away. I know you will do your best."

"I will do all I can," she said, and her tone carried conviction.

"The worst part," said Rudge, "is that I have no confidence in the Government, and its members are divided among themselves. I have spoken with Professor McFaden, and he and I are now absolutely at one in this affair. Keep in touch with him. He is shrewd as well as reliable."

He then astonished May by telling her that £5,000 was deposited in the bank in her name, and handed her the cheque-book.

"Spend it in this cause," he said, "under McFaden's advice, if and as required. Fight whoever opposes me. Don't let the money question bother you."

"But—Miss Rudge?" said the woman in May.

"My sister remains mistress of my house. In that she is competent; in this she would not be. In the matter you deal with she would be worse than useless, and, fortunately, she knows it. Let each of you keep to her own duties, and all will go well."

May Treherne's eyes shone. She thought of her late position at Sales, Ltd.

She was proud, but a little nervous of her responsibilities. She had plenty of pluck, but was glad of McFaden as a counsellor.

The *Sagitta* sailed. Professor Rudge's one prayer was that the voyage might be an uneventful one, but the times were not uneventful. She was not far on her course when trouble began at home, thanks to self-seeking in high places. This rapidly developed until it became the greatest horror of its kind that Europe had ever experienced.

Leaving details of that for the moment, it may be mentioned that the first news of the panic and uproar came to the *Sagitta* by the secret naval code while she was coaling at Singapore.

Professor Rudge and the officers were horrified at the short epitome they got of events at home, but while they were lamenting it a cable message from the admiral commanding on the China station was handed by Captain Evered, the moment he had read it, to Professor Rudge. It at once drove all thoughts of what they had been speaking about out of his head.

It said: "*Sea Lion* not at Station X. No one apparently on island."

Rudge went pale. The paper fluttered to the deck.  
"My God, Evered," he said. "We are too late!"

## CHAPTER XVIII

### Panic

**W**HEN the *Sagitta*, with Professor Rudge on board, left England, it would have been difficult to define precisely the average opinion respecting the Martian danger held by the comparatively few people who knew anything about it. There were at least half a dozen who had no doubt whatever that humanity was now in the actual presence of the most awful peril that had ever threatened it.

These few included McFaden, and certainly two of his brother scientists.

There were one or two others among scientists and members of the Cabinet who were sufficiently persuaded by the evidence to be anxious that every means should be employed to combat the danger.

Among the rest, opinions graduated, until one

came to the few who flatly denied the whole thing, and while excusing their incredulity by asserting that Rudge was mad, were naturally too illogical to see that their solution, if accepted, scarcely weakened the evidence.

Things might have remained in that position and the public have been protected by their ignorance from the horrors that followed, but for the action of certain opportunists who thought they saw a chance of personal profit.

The *Sagitta* was scarcely out of the Channel before paragraphs began to appear in the papers respecting rumours that a being from Mars had appeared on earth. Considerable ability was shown in making his appearance and wanderings highly ridiculous. The subject lent itself well to the illustrated comic press. He became a music-hall gag and a subject of encore verses to popular songs. "Have you seen the Martian?" became a catch phrase.

Not the slightest hint was allowed to creep into these references that politics was behind it all. But the desired end was achieved. All the world laughed—truly all the world, for the man from Mars was as popular on the Paris boulevards and in Italy as in London. In view of the more mercurial character of the people, it was not surprising that the *furore* for the absurd Martian rose to much greater heights abroad than in England. No cinema programme was complete without him in some form or other.

This continental part had not been in the original scheme of the plotters. The infection had simply crossed the Channel and spread.

The conspirators were satisfied with the result of their plot, and considered its aim achieved, that end being, of course, to make the popular conception of the Martian so completely and irretrievably ridiculous as would make the Government's action more than difficult to defend, and bring it down in ruin.

It was therefore the time to strike and charge them with having taken the joke seriously, and with the squandering of public funds over it.

### Fear Following Ridicule

**A**T first, guarded hints appeared, somewhat indefinite, but sufficient for their purpose of starting on the trail that ever-wakeful creature, the inveterate parliamentary sniper. They had a glorious time, without knowing or caring whose interests they were serving. Their questions became every day more and more embarrassing.

Lord Saxville suspected the source of his new trouble. His instinct told him that very soon the enemy's heavy batteries would be unmasked and an opportunity be asked for to discuss the charges of having moved a considerable fleet on a fantastical business instead of leaving it where it was really wanted, and with blocking the wireless so as temporarily to cover their stupidity.

He saw that unless something were done his downfall was certain.

The public was quite able to see that there must be something about which it had not been informed, and Lord Saxville realized that it was not only necessary for his own safety to let some of the truth be known, but that it was getting beyond his power to keep it back.

So another account of things began to get pub-

lished, and the public pricked up its ears. It recognized at once a different tone in these statements. The Martian assumed another form, no longer a myth, but real; another expression, no longer comic, but sinister and menacing.

But it was overdone. Just as the original idea to make everything ridiculous had been overdone, so these later representations were deliberately designed to throw up all in a lurid light. There was little or no thought for the consequence. It was simply politician against politician.

The result of the sudden revulsion of feeling was doubtless unforeseen, and to a great extent unforeseeable. The politician had saved his seat, but neither attacker nor attacked had regarded the cost of their game. Statesmanship would have known that the actual position demanded a certain reticence, but it was bungled. The demand now for full and exact information became irresistible. The clamour throughout Europe was not to be denied.

If there had been no lampooning and only the information necessary given with proper discretion, the situation might well have remained under control. As it was, the people remembered that at the thing which now filled them with dread they had been encouraged to laugh.

It could not be expected that foreign governments would accept the Martian seriously on such very questionable evidence as was yet before them. So when they became aware that a considerable British fleet had been moved, nobody knew where or why, and that without control of the cables, and the block (possibly our block) of the radio, anything might be happening, their London embassies became busy.

May Treherne and McFaden

**F**EELING the need of shifting some of the responsibility at home, and of having for the purposes of the Foreign Office, a more scientific account than it could prepare for itself, Lord Saxville, driven almost to his wits' end, sent a confidential messenger to Professor Rudge's house to ask who now represented him in this country.

The messenger was rather surprised to be received by May Treherne as the person he sought.

Having learnt his errand, May Treherne asked if Lord Saxville would make an appointment to meet Professor McFaden, and was told that he would be glad if the professor would call on him so soon as possible.

May went immediately to McFaden and told him the Prime Minister wanted to see him at once.

"Why?" asked the Professor.

"I don't know exactly," said May, "but it is about the Martian."

"Well," he said, "I suppose to hear is to obey. Will you come with me?"

She declined the honour.

"But you will be careful, won't you, Professor? They are so wily, these politicians."

Her anxiety lest in some way he should be overreached in Downing Street, while acting for Professor Rudge, amused McFaden considerably.

"I'll do my very best, young lady," he said.

"I am sure you will," she said. "Professor Rudge is so clever, so strong, so brave, that any one must feel it an honour to act for him."

"Is that so?" said McFaden dryly.

"Why, of course it is so," said May Treherne, with conviction. For a moment she almost repented her decision not to go too.

"I will see you when I return," said McFaden, "and you shall learn what two able advocates Rudge has left behind him."

"Two?" said May.

"Aye, two," said McFaden.

Lord Saxville did not allude to Foreign Office difficulties to McFaden. He explained his wish that the Professor should at once prepare a short treatise explaining in a scientific manner the present position in respect to the Martian, and dealing very fully with the evidence, and above all let him have this so soon as possible.

He was also to embody this in articles suited to the scientific journals for the better and more general information of the educated public.

"An attempt has been made by certain people," said Lord Saxville, "to misrepresent the facts, and measures to correct this have followed, with the result that the public is confused and alarmed. I hope, therefore, you will publish the thing in a form adapted for the information of those capable of appreciating the evidence, as distinguished from the ignorant and impulsive masses. For these, the influential public, are also getting restive, regarding neither of the accounts hitherto sent out, as acceptable."

"Will that," asked McFaden, "allay the alarm?"

"It will be for the Government to deal with the symptoms of the rising panic. I wish your presentation to convince the thinking section that the measures taken were justified, and that everything necessary has been done."

#### McFaden's Conviction

"**I** DOUBT," said McFaden, "if we remain under **I** that impression long."

"You think our measures inadequate?"

"I doubt," said McFaden, "if any measures within our power would be adequate."

"Do you mean that this Martian is going to succeed against a world in arms?" There was anxiety in Lord Saxville's tone.

"The world," said McFaden, "is not in arms that I am aware of. After it reads my report perhaps it will consider it better that it should be."

"You are not going to write an alarmist document?" asked Lord Saxville anxiously.

"I am going," said McFaden, "to write the facts. Unless my mind deceives me, that will be a more alarmist document to the man who can think—there are not many!—than any or all of the cock-and-bull stories now current."

"Well," said Lord Saxville, extending his hand, "I hope you will let me have your statement as soon as possible to-morrow, and that things are not quite so bad meanwhile as you fear."

Professor McFaden had not been slow to see that Lord Saxville was primarily fighting for his own hand, but was also genuinely desirous of allaying the popular alarm and killing the various pernicious and exaggerated tales going about. The vital and urgent business of fighting the Martian had, however, retired into the background of his mind.

Professor McFaden was so far right. The truth

had no element of reassurance or consolation in it. He was a deep and clear thinker, and had given time and study in visualizing the possible powers of the superman. It had not left him an optimist. It had not convinced him that enough was being done.

He kept his word to May Treherne, and reported his interview. She discovered his doubts of success.

"We have one element in our favour," he said, "in that we have a good man at the helm in Rudge. Within human limits he will not fail."

He seemed willing to talk for once, and he had a sympathetic listener.

"Well, Professor McFaden," she said, as he rose to go, "your sex, I believe, is inclined to deny mine reason, but at least grants us instinct. Now, your reason tells you that we are going to fail in spite of Professor Rudge, but I have an instinct that tells me we shall win because of Professor Rudge."

"Well, lassie," he said, in going, "then I'll also be having an instinct—that if friend Rudge does win yonder he'll come back to meet wi' another difficulty, and be beaten to a frazzle, as the Yankee said." He went away chuckling, leaving May Treherne with no idea of what he was talking about.

#### Impending Panic

PROFESSOR MCFADEN'S articles appeared, and their influence was marked. They killed a great many wild and absurd rumours, and thus did good, but the people to whom they were really addressed were exasperated at having been played with and kept so long in the dark.

Letters and articles appeared in all the big dailies, wanting to know why facts had been suppressed, while lampoons of so terrible a thing were being sent about. Why this incredible muddling, etc., etc.

The savants of the Continent also did not dissemble their indignation at the way the English Government had treated them, and its easy-going way with the peril itself, which after all was an international affair.

"This matter," they said, "is not a British question; it is a world question. It is not for any one nation, but for humanity, to say what measures should be taken; and it is urgent."

The daily press of every country, now thoroughly informed of the facts, filled its columns with details, explanations, political recriminations and advice.

Pulpit and platform dealt with it, and as its horror became more clearly realized, its danger understood, the world rang with it.

Much that was written and said publicly, although true in the main part, was highly injudicious, and the effect on the masses deplorable. Once the thing had really seized on the popular imagination nothing availed to stay the panic. The very intangibility, the ghastly character of this psychic threat, so awful, so imminent, gripped even those whose temperament would have enabled them to meet an every-day material danger unmoved.

The power of this invader to seize on other personalities struck a note of terror that found an answering chord in minds even the most phlegmatic. Its effect on the nervous and hysterical was terrible.

#### All Europe Alarmed

UNFORTUNATELY, among the densely ignorant peasantry of the south and east of Europe, there are several horrible superstitions, of which the seizing and entering into possession of people by evil and unshaven spirits, is a prominent part. They were therefore the less inclined to wonder at or doubt this power of the Martians, and were ready in many cases to fight the foe with exorcising rites of the most fiendish description.

Everywhere people began to look in the eyes even of their most intimate friends with a suspicion, a question in their glance. Among the more superstitious section of the community, if a person behaved in an aggressive or eccentric manner, his life was in peril. In this connection there were daily happenings of a most deplorable nature—assaults, murders.

In order to stay the wild panic, the utmost publicity was given to the information that the danger was small, because localized by the *Sea Lion* having now been reinforced by a fleet sufficient to prevent the escape of the Martian from the island of Station X.

The reassuring nature of this was qualified by the picture it drew of what must be the Martian's power when such measures were necessary.

Then on the very heels of this, the tidings came through that the Martian had seized the *Sea Lion*, and, in full command of her crew, had left the island for no one knew where. Without thought of the consequences, this news was published. The floodgates of panic and unreason were opened. Scenes were enacted that would have been almost incredible as occurring in mediæval or ancient times, but which no one would have believed possible in ours. Along the east Mediterranean littoral and throughout the Slavonic countries, and in certain parts of southeast and eastern Europe, including Russia itself, the state of panic rose to its greatest heights. Here it was no longer a question of one Martian, but of thousands—everywhere.

Hope of escape seemed to be relinquished. The world was panic-stricken. People fought like cornered animals. Pitched battles, originating in some trifling incident, no one knew what, took place between contending mobs, until streets ran blood.

The very scenes their own madness enacted confirmed each that he, (or, alas! she) was fighting for life against Martians in human form.

Things did not come to this pass in the west of Europe, but in several countries it was a fact, perhaps not altogether to be wondered at, in the atmosphere that surrounded them, that the rulers as well as ruled lost their heads.

One thing was, however, settled at once without opposition—and it was the wisest decision that could have been arrived at—that there should be unity of direction in what concerned all equally, and that, while he was available, Professor Rudge's advice should be law.

McFaden maintained an impassable exterior, and tried to busy himself with other things, but he knew it was a miserable failure.

May Treherne and McFaden Again

**H**E, the reputed misogynist, fell into a habit of going round to Great Queen Street and having a cup of tea. May Treherne's confidence and bright optimism comforted him.

It was impossible at this time to talk about any but one subject, and here was the only place where he cared to talk about that.

If May Treherne's brave spirit, that shed and refused all doubts and fears, seemed good to cynical McFaden, it was still more so to Miss Rudge.

That good lady, beginning by liking the girl, soon passed all the stages of loving her.

"What should I have done," she said, "in a time like this if my brother—may God protect him!—had not provided me with May to cheer me?"

"She is a fine lass, and sensible," said McFaden, "and her confidence is wonderful."

"Her confidence," said Miss Rudge, "is in my brother."

"I notice that," said McFaden dryly.

Miss Rudge caught the tone of the remark.

"I was," she said, "at first afraid for Stanley, not knowing what the girl was like, and seeing that there must be about twenty years between them. But now I should think him lucky to have such a wife as May would make him."

May Treherne would have been surprised had she heard this conversation, and it would not have pleased her.

She believed herself now and for always true and devoted for life to the memory of her dead lover. She had had little enough time to analyze her feelings, and she was not introspective. The truth was that her love for Macrae had been half mother love. She had now for the first time come into contact with a brave spirit, kindred of her own. She had felt the glow of its influence, without comprehending. If the sun shone the seed would grow.

Her memory of the dead would not necessarily all die. It would grow less a part of her life. The moon shines by day, but few see it.

## CHAPTER XIX

### Professor Rudge Lands at Station X

**P**ROFESSOR RUDGE, at Singapore, recovering from the shock he had received, braced himself to meet the new situation. He recognized that it was now critical.

It was evident that once again the Martian had taken a long stride forward. Moreover, he had won and retained all the manifest advantages of the initiative. He had this time left his opponents in the dark as to the exact nature of the blow he had struck, or where the next might be expected.

"I suppose there can be no doubt," said Captain Evered, "that the Martian is really responsible for the *Sea Lion's* disappearance?"

"It is almost a certainty," said Rudge. "There was the clearest understanding with Captain Connell that he should not leave the neighbourhood of the island nor communicate with it. There is no doubt in my mind that it was on the latter point that the wily foe outwitted him. In that case the situation we have now to deal with is a thousand

times worse than if that unfortunate vessel had never been sent. I fear we must reckon now with a Martian in command of the *Sea Lion*."

The picture was sufficiently alarming, and over the cable Professor Rudge learned of the effect of the news in Europe and elsewhere. It was even more terrible than he had expected.

The reason, he was quick to appreciate, was due to the public perception of the increased difficulty in dealing with the situation that had now arisen.

Its effect from that cause was enhanced by its being universally felt that here was now an overt act that utterly removed the comforting idea that the thing might not, after all, be as bad as had been represented.

This further and conclusive proof of the reality of the danger against which they were called upon to act, and the difficulty of deciding on the lines that action should take, affected different statesmen in different ways. The lethargic it roused to nervous energy; the naturally nervous it reduced to a state bordering on helplessness.

The first impulse everywhere was to get the advice of Professor Rudge as to the next thing to be done.

His reply was prompt. "Let two of the fleet at Station X remain to guard it and the remainder endeavour to get information of the direction taken by the *Sea Lion*. Above all, every radio installation in the world must be instantly dismantled in case the Venerians close their wireless barrage."

Commodore Evered agreed that, by scattering, news might be got from some merchant ship.

Professor Rudge found that he would have no difficulty in procuring the measures that he considered necessary. In view of the internal state of each country, apart from the danger and urgency of the thing to be dealt with, no urging on his part was required.

Professor Rudge, International Adviser

**A**LL were anxious to do everything possible in the endeavour to overcome this world menace, and to seek Rudge's advice and assistance. He could not but contrast the Government's attitude now with that when he had first put the affair before them. Then he could only gain attention under threats; now he was being overwhelmed with inquiries as to what should be done.

He was begged to remain in port so as to be in touch with the cable until everything had been arranged. All foreign Governments seemed to regard him as their chief adviser, as being the most likely to be able to divine the Martian's intentions.

This he utterly repudiated, repeating to all that it would be absurd for any human being to pretend to be able to fathom the Martian's plans.

"The thoughts of these beings," he cabled to Whitehall, "are undoubtedly so far above our reach that it is useless to make an endeavour to read their minds. The only thing for us to do at present is to seek the enemy in every direction to the utmost of our power, and destroy him without parley."

"We know his object, and we know his starting place. The rest is surmise. That is why I say we must seek in every direction."

It says much for the energy of the various Gov-

ernments that before many hours had passed various units of the fleets were being despatched to their allotted stations with instructions to get in touch with each other so soon as possible, to gather all information possible from merchant ships, and every other source available, and to use every endeavour to prevent the *Sea Lion* making any Continental landing.

#### The Burden of Rudge's Responsibility

THE various fleets were allotted areas according to their position when the orders were given. The Japanese and British ships of the China squadron were ordered to cover the north and Asian coast line. The fleets of American Powers were to keep watch on the East Pacific. Warships were rushed from the Mediterranean to cover the African littoral. European warships were sent, some by Suez, some by the Cape. Vessels of every size and accompanied with balloons and seaplanes rushed to their posts. All the navies of the world were galvanized into sudden activity, the unifying idea of the whole being to form as quickly as possible a vast ring enclosing as much of the Pacific as possible, with the object of enclosing the *Sea Lion* and finding her.

As soon as the plan was settled, the *Sagitta* proceeded with Professor Rudge on her journey to Station X. On hearing of the disappearance of the *Sea Lion* an idea had come to the Professor and he was anxious to be at the island as soon as possible. In his mind time was the essence of the thing.

In the conversations that took place on board he gave his views for what they were worth. He was careful to explain how little their worth might be. It was all hypothetical, and the plans of the Martian were an impenetrable mystery.

"By some means beyond our power to guess at," he said, "he may have got away from the island, and the *Sea Lion* have gone in chase. The *Sea Lion* may have been attacked and sunk, and the Martian and his two slaves be still in hiding on the island. Thirdly, most dangerous, and seemingly to us most probable of all, the Martian obtained command of the battle cruiser, and has gone off in her—where?"

He also said that as the Martian's aim was to bring other Martians in the same horrible way as he himself had arrived, it seemed plausible to suppose that he would desire to get where he would be safe from sea bombardment and have at command a sufficient population to be his slaves in the work of erecting a powerful radio station for communication with his own world. The ultimate purpose would be to turn all into Martians, until an army of these existed before which anything in the nature of human opposition would be cut of the question.

It was impossible to say if he had decided upon Asia, Africa, or America, or upon any of the many large islands extending from south-eastern Asia. He might even decide upon Australia.

The fleets had therefore been sent to defend and cut off his access to all these coast lines. Would they be in time? Professor Rudge kept as brave an exterior as he could assume, but in his secret heart he was not sanguine. He considered the chances were on the side of the Martian.

Stout-hearted as he was, he felt at times that

the anxieties of the moment were too great for any man's shoulders to bear, and without parallel in the world's history. In the past there had been some vital decisions, when arms and valour had decided in a few hours the broad lines of history for centuries. These had been such questions as to whether Europe should grow into all we mean by that word, a lamp by which all the world should be lit and led, or be forever a mere appanage and dependency of Asia.

Never before had it been the case of a day, or perhaps an hour, deciding the fate of the whole human race.

Professor Rudge considered it fortunate that the large and efficient naval force of Japan was promptly ready to reinforce our eastern squadrons, as it seemed to him that China and India, with their enormous populations, must have great attractions for the Martian. Once either of those countries was attained, the Martian's victory was certain.

Every available vessel was pressed into the service, even destroyers and submarines. Seaplanes were based in the larger warships, and thus greatly extended their radius of observation.

#### Suppression of Private Radios

BY the time the *Sagitta* reached Station X, the combined sea and air fleets of the world had drawn a kind of cordon round a vast expanse of the Pacific, within which it was reasonable to suppose the *Sea Lion* existed. No news had been received of her having appeared on any coast, or having been sighted by any of those on the look-out for her afloat.

This was not conclusive that she had not been seen, for some of the ships were far from any cable station, and it was strictly forbidden to carry radio. In any case it would have been useless while this mysterious interruption lasted.

Under Professor Rudge's advice, it was universally made a capital offence to have a radio installed, big or little. Any person, official or private, was empowered and enjoined to shoot, or in any way kill at sight, any one contravening this order. A large reward accompanied the rendering of this public service.

It was true that this order caused the deaths of many innocent people. In the state of public feeling that was inevitable. The danger was, however, so great, so overwhelming, that the order, with all its drawbacks, was considered more than justified because of the risk of the Martian succeeding in circumventing the protective action of the Venetians, and so establishing rapport with some unfortunate operator somewhere, thus nullifying all the efforts being made.

There was one exception to the wireless order. On board the *Sagitta* was a small installation under Professor Rudge's own sole control. This he had arranged for a purpose of his own, so that it could be rendered efficient by touching a switch, to the extent of just enabling him to hear the sound of the Venetian interruption, but nothing else. In his dread of the Martian, he had arranged it so that should a single syllable come through, the pressure of a finger would instantly cut the connection.

He had been busy during the voyage over this installation, its beginning dating from when the

news had been received that the *Sea Lion* had disappeared. An idea had come into his head that he spoke of to no one until Station X was reached.

As the *Sagitta* approached the island, he had more than once put his ears to the receivers for a moment. The gabble of the interruption he found still going on.

Part of the *Sagitta's* new equipment for this voyage was a captive balloon of the long or observation type. When only a couple of miles from the island, Professor Rudge asked Commodore Evered not to approach nearer, but to steam slowly round it. He himself went to his radio and listened. The interruption continued. He listened. Will they invite me to land? he thought. It was what he had come for.

He was convinced the Venerians were the cause of this etheric disturbance, and that it was done on our behalf; neither had he any doubt that the present position of the *Sagitta* was being closely observed.

Suddenly the interruption ceased. Hope once more lit the features that had lately grown so haggard. Confidence returned. The cessation of sound could be no coincidence, nor—the thought crept in—a Martian trick?

#### The Ether Once More Open

**H**E went on deck, and found that under Commodore Evered's direction the gas cylinder had been brought out, and the balloon was being inflated.

A keen-eyed young officer volunteered to man it, and, with balloon aloft at a sufficient height to command the whole island, the *Sagitta* again steamed round it.

As soon as the balloon was hauled down, the observer reported.

"I cannot see any one on the island," he said, "nor any obvious hiding-place, but the rough surface of the ground would make it possible for any one to hide without danger of being discovered. The shell holes caused by the bombardment are quite visible. The station buildings have not been re-erected. There appears to have been no attempt in that direction. There has been something done to the installation, though! A lot of poles have been erected, and the wiring looks quite in order. It might now be a perfectly going concern for anything one can see to the contrary."

The pleased look on Professor Rudge's face still further increased; he even rubbed his hands.

"Commodore," he said, "I want you now to load and train your guns forward and steam slowly to within half a mile of the shore. Instruct your gunners to fire at anything that moves. Also post some snipers in the fighting top. I don't think we shall see anyone. The island is, I believe, abandoned, but we must reduce all risks to a minimum."

The *Sagitta* slowly advanced. There was an acute tension on board. Officers and crew knew that all the world was in uproar, that mankind felt itself trembling on an insecure foothold, on the brink of a bottomless abyss of ruin. They knew that ahead of the *Sagitta*, behind the fringe of cliff, lay the source and centre—or what had recently been the centre—of the terror.

When about half a mile distant the *Sagitta's* en-

gines were stopped. It was evident to all that something had inspired the Professor with confidence. He was slightly flushed as he turned to the Commodore.

"Evered," he said, "I have something to tell you of the greatest importance, unless my reading of it is completely wrong."

He drew him aside to where they could not be overheard.

"While we were at Singapore, and the news that Station X was apparently deserted was brought to us, I wondered how this might affect the radio interruption by the Venerians. That is why I rigged up this installation. I knew that in the present relative position of the planets all our movements were being closely watched by our powerful allies. Their having started their radio interference implied that the Martian was refitting the wireless at Station X. Would they continue their block if it should be true that the station was deserted, and before any other should be erected, if I approached the island?"

"In the absence of poor Macrae I am now the only one with whom they can communicate. Would they, if possible, do so? As we steamed round the island I awaited a sign that our position was noted, and an encouragement to proceed. They must be all aware of the dread we should have in doing so. They look upon us as anything but a courageous race. To put the matter to the final test, I requested you to approach the island as though to land. My hope is fulfilled. The interruption is silent. At this moment there is nothing to interfere with radio communication!"

Commodore Evered appreciated the significance of this.

#### Professor Rudge a Hero

"**F**EELING," went on the Professor, "that the need might arise, I have written the fullest advice for the future, under different contingencies, so far as I can see them. You will find this in my cabin, addressed to you."

"But you're not going to leave us!" said Evered.

"I am now going to land on the island," was the reply, "to communicate, if all goes well, with the Venerians."

"But that will not take long, will it?" asked the Commodore.

"The conversation," said Professor Rudge, "will, I think, for a good reason, be short; but I shall be permanently lost to you."

"Lost to us!" was the surprised reply. "How lost to us?"

"Please give the order," was the quiet rejoinder. "Time presses. Have a boat loaded with provisions sufficient for a month or two, with a tent and camp bed. Food and water, of course. While this is being done I will explain to you my reading of the situation. It is essential that we do not lose time."

The Commodore looked at the Professor for a second or two in surprise; although he could not understand the drift of them, he gave the necessary orders.

Professor Rudge continued his explanation.

"I land," he said, "in the one hope of getting into communication once more with the Venerian. If I have read the signs correctly, I shall do so. If I

am wrong, which well may be, I shall!"—he paused—"become as Macrae has become."

"If this is some risky service, then I insist on going," said Commodore Evered. "Larch can take my place; there is nobody to take yours."

"That's impossible," said Professor Rudge, "as you would not be able to speak with the Venerian."

"Then at least I can come and assist you——"

"No, Evered. I thank you heartily, but it would be the useless risk of a valuable life. I must go alone."

"But it beats me why you cannot get your conversation over while we wait for you, and let us take you back."

"That," said Professor Rudge, "is the most important thing of all. If the island is deserted and the installation in order, or so that I can quickly put it so, I shall have a communication to make you that I hope will save the present desperate situation. For I confess, although every one is now doing his best, I had very little hope. Our chances, in consequence of the long start of the *Sea Lion*, seemed very small. If the island is not deserted, and *I tell you it is quite possible*, then I shall meet the Martian.

"Which happens may not be apparent to you. Therefore after I have landed, you must not allow me to return or approach the *Sagitta*, any more than you would if you knew me to be the Martian. I shall take a line with me, and if all goes well, I shall fasten a bottle containing a note to the end of it. In this there will be a place mentioned. It will be where the Martian is. Go there immediately with all the most powerful war vessels you can collect en route. See that you have more than ample force to deal with several *Sea Lions*.

"Let nothing escape. Sink, burn and destroy all you find. Let no living creature evade destruction under any plea or pretence. Impress it on all. It will be the one chance given us! Remember the stake, Evered! I have not time to say more. Remember that if ever the moment comes of which I speak, as God grant it may, everything we hold dear, in a fuller sense than ever the words were used before, everything depends on your ruthlessness and thoroughness."

Professor Rudge was satisfied with the expression he saw on the Commodore's face, and with the knowledge he had of his character.

"And now," he said, in less forceful tones, "to the thing immediately before us. Remember, if all goes well, I shall not ask to be taken on board again. Disregard any message of the kind I may send you, or any wile of mine with that end in view. If there is any advice or instruction contained in my note beyond the mention of a place, probably indicated by latitude and longitude, do not act on it. Remember also that the place I mention may be fraudulent. If so, it will for a time weaken our total force by a few vessels, but that risk is worth taking. That is all, and I see my boat is ready!"

#### Marooned on the Island

THE Professor went below for a few moments, during which he wrecked his radio.

Commodore Evered, as he shook hands with him, said:

"And they said, Professor, that the human race lacked courage! They said it to *you!* They must be a peculiar people, these Venerian friends of ours!"

Professor Rudge only smiled in answer.

The "Good-bye and good luck!" was soon spoken, and the self-marooned man pushed off alone with his laden boat. They watched him land, fasten his boat and scale the cliff. In another second he was lost to view behind it.

## CHAPTER XX

### The Fleet Assembles

**F**OR a few seconds the Commodore gazed at the spot on the cliff where Professor Rudge had disappeared.

"That," he said, "is the real thing."

When he had scaled the steep cliff and lost sight of the *Sagitta* and of the sea, as he walked down the gentle incline of the island, Professor Rudge was afraid.

He did not know who, or what, might be watching him, like a spider watching an approaching fly. He knew that somewhere in the world there was a mighty embodied spirit of evil, not human, vastly superhuman; one whose dominant gaze he would be unable to meet, in whose grasp—not physical, but spiritual—his spirit would be powerless, a mere wisp of thistledown to be caught up, hurled aside, at that being's pleasure.

Not knowing what any moment might produce he walked straight on.

A shiver ran along his spine, causing his scalp to tingle. He was in the presence or neighborhood of the uncanny. Still he walked straight on.

#### What He Saw on the Island

**T**HE little scene before him was very familiar. One accustomed object was missing—the wooden bungalow. Some small fragments of it were scattered about.

But all else, every other detail that met his eyes, was subsidiary to the answer they received to the great question that had been worrying him—the radio. A glance showed that it had been re-erected.

The conclusion that it would be there he had arrived at by deduction. His coming to the island at all was the result of that reasoning; the deduction simplicity itself, but, like many other simple processes, requiring the one man. His argument was: the Martian is at Station X; the Venerians are blocking the radio; therefore there is again wireless at Station X.

The labor for three pairs of hands must have been enormous, almost unthinkable. There must have been a powerful motive. He could guess that motive. Poor wretches of the *Sea Lion*!

He noticed that very little of the wood of the bungalow now existed. As he strode forward he wondered what had become of it. Fuel for some chemical work, or to produce tantalum from some mineral for tube filaments. The thought of tantalum reminded him of the missing vacuum tubes. He saw the system was different, but he was confident no mere vacuum tubes could be made to do his work.

Certainly the effort to solve this was not essen-

tial at the moment. Indirectly it was beneficial, as it diverted his thoughts.

On arriving at the spot where the radio operator's seat and fittings had been, and, in other form, still were, he noticed near him a large tank filled with viscous fluid, divided into small compartments. He tested these fluids with finger and tongue; some strongly alkaline, the base soda; others corrosively acid, chlorine the active agent. So that was how it had been done! A Martian battery!

There was a generator also, a mystery totally unlike any machine of the kind he had ever seen. Here is a rich harvest, thought the scientist, if only we come through.

Effective? Through the incautious movement of a finger, in attaching the storage tank, he very nearly received a charge that would have ended his life in a moment.

In the smallest possible space of time Professor Rudge had sufficiently mastered the arrangement, put the receivers over his ears. The great moment had arrived.

A violent shudder shook him from head to foot. Yet he did not now consciously feel fear, although he noticed that his hand trembled.

As he opened his mouth to utter the well-known call, an involuntary glance round was taken. Somewhere in his brain something seemed to say, although in many details quite novel to him, and "Heaven shield me from an answer at my elbow!"

#### The Venerian to the Rescue

"ARE you there?" he said.

A Professor Rudge had informed himself as to the exact positions of both Venus and Mars. The former was approaching superior conjunction, but still making a considerable angle with the sun. Her distance, measured in etheric wave terms, was six minutes. Mars was coming near, although a long way from direct opposition. One result of these relative positions was that the dark or night side of the earth was turned to Mars, the bright or day side to Venus. Rudge saw that there might be an advantage in our doings being visible from the latter but not by our enemies.

The quickest answer he could receive to his call was in twelve minutes. The earliest answer from Mars would take more than double that, but that did not affect him, as he was not in the necessary *rappor*t with any Martian for a call from that distance to reach him. But he knew that if the Martian now somewhere on earth had his instrument ready, his call might come through at any moment.

It was under such terrifying conditions that he prepared to keep his ears to the receivers twelve minutes, with what fortitude he could. But he had reckoned without the Venerian.

When he had been waiting six minutes a voice came through. The voice—how well he knew those silver tones!—Never did voice sound so much like heavenly music as did this to Professor Rudge.

At the first sound of it he realized that he must have been closely observed. His call had been awaited.

It said, "We have seen you come to the island with pleasure, Professor Rudge. It was well thought of and bravely done, and gives your race still a chance when nothing else could."

"First, the present position. The *Sea Lion* came within three miles of the island, and the Martian doubtless swam to her at night, for we saw next morning that he was in command of her. We have been erecting a plant for the emission of interference waves, but it was not finished in time to prevent the horrible occurrence of that day. This interference emission is not under sufficient control to be made a means of communication. It can only prevent communication. The *Sea Lion*'s crew are nearly all Martians. We blocked the communication before their evil work was quite completed. For once they were taken by surprise.

"Finding what we were doing, they evidently at once decided to begin elsewhere the erection of an installation that would overpower any attempt on our part to interfere. We do not know what form this can take, but know the Martians well enough to be sure they will succeed.

"Evidently it requires connected positions further apart than is possible at Station X. They have consequently left, on the *Sea Lion*, for the larger island at longitude 180°, latitude 50° north. Write that at once: longitude 180°, N. lat. 50°. They are now there, erecting their plant. If they finish it before they are interfered with, the world is theirs.

"And now, secondly, what you must do is to collect with all speed at least ten times greater fighting strength, and go to the place named. There must be no near approach to the *Sea Lion* nor to any Martian. By bombardment, at greatest distance practicable, destroy first the installation, then all life on ship and island, man and Martian.

"Your fate depends on two things—arriving at the place in time, and the complete destruction of every living creature. Go at once. If all goes well we can converse later. You may lose by one day, one minute even. That is all."

The last word had scarcely been spoken when the jangle of the interference recommenced. Professor Rudge had no doubt that his return to the boat would be taken as sufficient sign that he had heard and understood, and that, if he remained, a further opportunity would be given him.

That being unnecessary, he put off the receivers and ran for the shore.

Hope lent youth to his feet and thrilled every nerve. The tremendous reaction he felt was the measure of his late depression.

He felt that this last chance had not been given to lose now. There must not be a moment's slackening. He did not forget that on every previous occasion, every time of crisis, the Martian had not only extricated himself, but had gained something.

There was no room for him to gain anything more, unless the earth were to lose all. Man had his back to the wall.

Arrived by his boat, he wrote the Venerian's own words from memory. They had burnt themselves into his mind. He had made only one note, the latitude and longitude of the island. This he carefully copied.

#### Alone at Station X

THE paper was put into the bottle and flung in to the sea. The half-mile of line was pulled in. With his field glasses the Professor watched the Commodore read the note.

"I will judge by his promptness now," he thought.

In ten seconds the screws were revolving. He smiled. It was a good omen.

A distant hand wave, and the *Sagitta* was on her course. Professor Rudge saw her signal to the two other cruisers, and saw them start in the same direction. The lonely watcher scaled the cliff again, and watched them till they were mere specks on the horizon. Another minute, and those too had disappeared.

Professor Rudge would have given anything he possessed to be on board the *Sagitta*. He had seen no other way without undue risk, but it was a hard fate that had kept him from the final scene, and parted him from his companions.

He saw a long and anxious time ahead of him, and considered the best medicine would be preoccupation.

He turned to the work of getting all his stores on the island and his tent pitched. With muscles of iron and the agility of youth, it did not mean so much as it would to most men over forty.

So well did his natural bent and the habit of many years serve him, that his last thought that night was what a storehouse of science the work of the Martian had now left to his investigation.

On board the *Sagitta* Commodore Evered received the bottle that was hauled aboard with eager hands, and did not stop to draw the cork. In two seconds he was devouring the contents. His spirits bounded.

As he read the last word his hand was on the indicator—full speed ahead.

"Now," he said, "we have them! Signal the cruisers to keep company. Set a course to the WNW."

Then he turned and waved his farewell, his one regret being the leaving of Professor Rudge behind.

He did not require a chart to tell him that the place mentioned as the position of the *Sea Lion* was due north of him, as the longitude given was practically the same as that of Station X. He guessed the place must be one of the Rat Islands of the Aleutian group, but found it was just south of them.

His plan was made with the promptness characteristic of him. To make, at the *Sagitta*'s best speed, for Japan, knowing he would be sure to pick up her fleet *en route*. To cable from Japan for the fleet guarding the North American coast to join them with the utmost despatch at long. 180°, lat. 45° N., and then with the united fleets steam north together and attack the Martians.

It would be the quickest way of assembling for the attack the greatest number of units available. It would take a little longer than going straight from Station X, but that would be to go with a weak force.

He remembered Rudge's earnest admonition not to underrate his enemy.

Of all enemies to underrate, the Martians was surely the last.

In any case he considered himself bound to report at once and state the plan he was acting under, pending orders.

While still a considerable distance from land, about 148° E. long., he encountered a Japanese cruiser, a unit of the fleet now guarding her eastern coasts. He reported the facts to her commander, and instructed him to inform the fleet with the utmost despatch and convey his orders that as many as possible should proceed to long. 180°, lat. 45°, while he went on to Tokyo for the purpose of getting to the cable.

Thus the world became aware of the result of the *Sagitta*'s visit to Station X. The salutary effect was tremendous. It calmed the overstrained nerves of humanity and greatly lessened the resulting tumult.

The Commodore's plan was confirmed, and all the warships then available in the North Pacific were ordered to the *rendezvous* and to place themselves under his orders. These included units of British, United States, Russian and Japanese nationality, which the last named made the most powerful contribution.

## CHAPTER XXI

### A Battle of Giants

**T**WO days after the marooning of Professor Rudge, and while he was engaged on his investigation of the Martian's work at Station X, he was astonished to hear the hum of an aeroplane's engines. Looking up, he saw a seaplane flying toward the island, in fact, already over the cliff. Its observer had evidently already seen him, for the machine was coming straight in his direction. Rudge watched to see the landing, wondering how this was going to be effected on so rock-strewn a surface. The pilot seemed himself to have some doubts, for he re-crossed the cliff and proceeded to land on the narrow strip of sand between cliff and sea.

The pilot met the Professor on the top of the cliff, and saluting stiffly, apologized if he were intruding, and announced himself as an officer of the German air force attached to the cruiser visible from where they were standing, about two miles from the island.

He explained that, the use of the island being now no longer a secret, the cruiser had been sent to pay it a visit and see if it could be of any use against the common enemy.

The reason given was so out of harmony with the situation at the moment, that Professor Rudge at once rightly gauged it as a prying expedition.

"Your visit," he said, mentioning who he was, then the best known name in all the world, and immediately obtaining another salute, "could scarcely in any circumstances have been of any use, but might easily have been very disastrous. As it is, it can do no harm, and I would like to go on board your cruiser to speak with the captain."

The airman turned facing the cruiser, and began swinging his arms, spelling out the request. In two minutes a boat was lowered, and after more salutings, carried Professor Rudge on board. Here there were further salutings, until Professor Rudge began to wonder if they resulted in unusual muscular development among Germans of the military and aerial caste.

In his conversation with the captain of the cruis-

er, he did not scruple to say that the visit showed a complete want of understanding of the character and powers of the Martian. He explained his own presence on the island, gave the information of the augmented force of the enemy and their present whereabouts, and the fight planned to take place there for their extermination.

Into the doubts and queries that had caused this cruiser to be sent to Station X there is no need to enter. The report of the airman and Professor Rudge's words appeared to have settled them.

The captain expressed his willingness to accommodate Professor Rudge on board, and needed no pressing to steam at once for the island where the world's fate would be decided. This was all the Professor wanted, and more than he had dreamed of occurring. He could almost forgive the real nature of the visit in his joy at getting passage to where he wished to be.

He would not hear of going ashore again for his kit, and with nothing but what he stood up in, the vessel started. Professor Rudge soon noticed that her speed was far less than that of the *Sagitta*.

#### 1,000 Miles North of Station X

**M**EANWHILE, 1,600 miles to the north of Station X, a fleet of fourteen war vessels, ranging from battleships to small cruisers, was assembling. Commodore Evered found that starting with this force would save him a day, and it seemed far more than sufficient against one battle cruiser, for it included three battleships, two battle-cruisers, six cruisers of powerful armament, besides three smaller vessels. It would also be followed in twenty-four hours by a considerable augmentation.

The Commodore decided to remain on the *Sagitta*. His reasons were her speed and because in the novel nature of the coming contest he did not know what unprecedented service might be called for, and he knew his crew and his ship and could depend on both.

There was none among the civilized nations ignorant of the Martian and the danger he represented. None the less, there was surprise even among the officers of the fleet at the *rendezvous* on account of the size of the force assembled against "so small a foe." They were able to gauge only the material danger. The force against them was the battle cruiser *Sea Lion*, and to their minds, that alone counted.

As soon as the fleet was assembled the Commodore made the signal "Captains repair on board." He explained his plans and handed to each a copy of his detailed general instructions.

So soon as all were again on their respective ships, he made the signal to start for the Martian's island, then about ten hours' steaming for the *Sagitta*, to the north. It was then four bells in the morning watch.

In the afternoon of the same day, a little after three bells, the island was raised, and the Commodore sent up a couple of seaplanes to reconnoitre, but with strict orders not to approach nearer than four miles. It was a good day for observation, a clear sky and atmosphere, no wind and a sea without a ripple.

The observers reported that the *Sea Lion* was visible, and that many people were scattered about

the place, working at something apparently connected with a radio installation already existing.

One reason for the choice of this island by the Martians was at once apparent in its peculiar shape and contour, which the naval chart did not fully indicate. It was seen to be a mountainous ridge of almost bare precipitous rock, four miles long, running in an east and west direction, but somewhat curved, the convex side to the north. At its highest point it rose nearly a thousand feet above sea-level. This was about a mile from its eastern end, where it had nearly a mile in width and from which point a branch or offset divided from the island and ran in a westerly direction, leaving a channel of several hundred yards in width, and of considerable depth, between it and the main part of the island.

This spur had little width, but precipitous sides, both inside and out, and a razor-like edge at its summit, something after the style of the *Needles*, but much longer than either of them.

It was in the inlet so formed that the *Sea Lion* was lying, invisible except by aeroplane, and immune from direct bombardment.

The Commodore placed his ships so as to encircle the island at a distance of five or six miles, with intervals of something over two miles between each two.

He placed the *Sagitta* due south, and the place of each of the others was duly set out in the instructions. West of the *Sagitta* were two other cruisers, Nos. 2 and 3. Facing the *Sea Lion* if she emerged from the inlet was the battleship, No. 4. North-west of the island were ranged cruiser No. 5, battle cruiser No. 6, and cruiser No. 7. Northward, cruiser No. 8 and battle cruiser No. 9. North-east, cruiser No. 10. East, battleship No. 11. South-east, two cruisers, Nos. 12 and 13. Between cruiser No. 13 and the *Sagitta* was placed the battleship No. 14.

#### A Ring of Ships

**T**HIS considerations that had decided Evered in this disposition were to have a ring of ships with strength fairly distributed to meet the *Sea Lion* as she came out, for he was convinced that he would be able to drive her out, and so compel her, in spite of her speed, and in whatever direction she might make, to meet the close and direct fire of at least three or four of his squadron. Meanwhile he had two powerful battleships, one east and one west, where, from the contour of the ground, they could most effectively bombard her, although indirectly.

The positions being taken up, the first order was to destroy the radio installation and any other work visible on the island, whether apparently radio or not. The guns of the battleships and battle cruisers gave tongue and awoke the echoes of the island and an inlet that for thousands of years had lain a placid backwater of the world's stage. It now became the centre of man's destructive forces. While this was in progress the Commodore was disappointed by the answer to a question he put to the seaplane observers. He learned that his first idea of sinking one of his ships to block the inlet would be ineffective through the depth of water.

The observers reported that all on the island ap-

peared to have retired to their vessel. They also signalled the hits. Soon the wireless installation was a tangle of ruin. The *Sea Lion* made no reply or movement.

Commodore Evered was satisfied so far. He considered the rest could only be a matter of time, and that time was now not of the overwhelming importance it had been. He was rather disturbed by the absence of any response from the *Sea Lion*.

Suddenly the might of the Martians was made manifest. Two enormous columns of water and smoke rose from where a second before cruisers 7 and 8 had been, followed by two terrific reports. Both vessels were blown up at the same moment by some under-water agency, and sank almost instantly, as though their bottoms had been blown out. Nothing had been visible above water as the

The Commodore now saw the task before him in its true proportions. He was fighting a foe of hidden and unknown powers. He remembered Professor Rudge's warning.

Deciding that every other consideration must give way to the most effective bombardment of the *Sea Lion*, he now ordered battle cruiser No. 6 and the two cruisers Nos. 3 and 5 to join the battleship No. 4 west of the island, at a somewhat greater distance than before, and proceed with the bombardment of the enemy. He placed battle cruiser No. 9 and the two cruisers Nos. 10 and 12 east of the island with the battleship No. 11, with similar instructions.

As the two cruisers that had been torpedoed were struck simultaneously, it suggested to Evered that the underwater craft got between her intended



The Commodore placed his ships so as to encircle the island at a distance of five or six miles, with intervals of something over two miles between each two.

cause of the disaster. The fact of two explosions being simultaneous precluded the idea of a mine or an accident. The cause was obviously a double torpedo attack; but how had they been launched, and from where?

As the only opening to the inlet was to the south of the island, the cruisers to the north had appeared to be in a comparatively safe position. The high ridge opposite them had rendered them of little use in the bombardment, and it had occurred to the Commodore that they might have been of more use in strengthening the line on the other three sides.

A thrill of excitement passed through the squadron. The Martians possessed a submarine!

victims and discharged her weapons at the same moment in opposite directions. As some protection again this he placed the ships, in each of the two groups, *en échelon*, and all the seaplanes were instructed to keep a special lookout for submarines.

The other three cruisers Nos. 2, 13 and the *Sagitta* herself, he retained south of the island, as some force for the purpose of interception should the *Sea Lion* emerge, and until the other warships could come up.

Under the bombardment so inaugurated, the *Sea Lion* must soon have suffered heavily had time been given. But that would be reckoning without the Martians.

## Martian Submarines

IN a few minutes one of the seaplanes reported that a large oval object like a gigantic turtle, of an estimated length of over twenty feet, was moving along the sea bottom just outside the entrance to the inlet, from which it seemed to have emerged. It was now making away in a SSW. direction.

The seaplanes were ordered to attack it with bombs, but before any direct hit was made it had attained water of a depth sufficient to hide it from view. There was no reason to suppose that it was damaged.

Shortly afterwards it was reported that some damage to the upper works of the *Sea Lion* had been done. It could not be well ascertained if this was of a serious nature without a nearer approach, but the Commodore would not allow any plane to fly over the island or in its close vicinity except at a great height.

The Martians made no use of the small guns of the warship against the aircraft, nor any reply to the bombardment. Without aircraft to guide them, a hit on the warships would have been a matter of pure chance.

Shortly before seven o'clock, however, there was a fresh development. A spherical ball, about three feet in diameter, of dull smoke color, rose from the *Sea Lion* perpendicularly until it was quite five hundred feet above the vessel; then it moved off on a horizontal course in a westerly direction.

Its speed both in rising and subsequently was not that of a projectile. At the commencement of its lateral course it approximated to some ten miles per hour. All eyes were fixed on it. What new manifestation of power did it indicate? It resembled a large, dark-colored, toy balloon. It had one peculiarity that differentiated it from anything of the kind that had ever been seen. It was obviously not carried along by the movement of the air after the manner of a balloon. It seemed to be impelled by some unseen force. It moved in a peculiar, jerky and jumpy manner, like the limbs of an automaton. What was the force controlling it? What was its sinister mission? The instinctive dread of the unknown was felt by all.

Its wobbly movement up and down and from side to side was persistent. Its oscillation from the direct path was sometimes several feet. These movements suggested that the ball was a heavy object pursuing some definite course.

If this were really so the mystery was heightened, as it would be acting in defiance of gravitation. Professor Rudge, had he been present, would not have been unduly surprised to learn that the Martians had mastered that problem, perhaps the greatest of those lying just outside the boundary of man's present knowledge.

All eyes were turned on this strange object. In less than a minute it was noticed that its speed gradually increased, the wobbling continuing. When about five miles from the island its course deviated a little south of west, and its speed was now three to four times its initial rate.

For a moment it seemed to hesitate, then to make up its mind, and continued its jerky course in the direction of battleship No. 4. Rifles and quick-

firing guns were turned against it, but without result.

It reached a point directly over the battleship. Suddenly it stopped as though gripped by some invisible force. The anti-gravitational action was withdrawn, and it fell, as a stone, on the vessel's deck.

The result was an explosion of terrific violence. The battleship was rent to fragments by some new and terrible explosive. No portion of her crew was ever seen again.

The two nearest cruisers Nos. 5 and 3 were so seriously damaged that they had to draw out of the circling line, and were with difficulty kept afloat. All hands on their decks had been blown to pieces.

This mysterious ball had attracted every eye until it fell. On this the Martians had apparently counted, for they seized the opportunity to get out another of the curious slow-moving submarine objects out of the inlet. A glimpse of one just disappearing in the depths outside was caught by an airman, but too late to do anything.

Meanwhile, two more balls had risen, similar in size, appearance and movement to the first.

Captain Evered signalled that all ships should concentrate their fire on this menace of the air. Meanwhile, a fourth was rising.

A ball only one yard in diameter, high in the air, constantly wobbling to at least the extent of its own diameter, and proceeding with irregular, curving and constantly increasing movement, is no easy object to hit.

Just as the last ball had finished its perpendicular rise, it was hit, and immediately exploded. Fragments of the outer shell rained down upon and around the island for miles. Some fell on the ships, proving to be iron, about the thickness of boiler plate.

The other two balls found their goals. As they increased in speed and could turn in their course it became impossible to avoid them. Their line of motion could evidently be modified as desired, although always in a wobbling, hesitating way. It suggested that there was some one, somewhere, handling levers that decided their course, in accordance with the reports of some observer.

The battleship No. 14 and cruiser No. 12 were the victims. Their destruction was as complete as that of the first battleship.

Commodore Evered kept calm, but he found himself faced with possible defeat. He had lost seven ships in a few minutes. What further devilish contrivances had the Martians to hurl at him? He breathed a sigh of relief as minute after minute passed and no more balls rose. He ordered the two cruisers and the remaining battleships, east, to resume the bombardment of the *Sea Lion*, and the great battle-cruiser No. 6, west, to do the same.

The moment after the order was given the battleship No. 9 was struck in the same way as the first two, followed a moment later by the cruiser No. 10. They settled down at once. In six or seven minutes they had both disappeared.

## The Battle

THE situation appeared almost hopeless. No more balls were rising, but Evered remembered that there was yet certainly one more of the sub-

marine things still unused outside the island, and it was obvious that it was from these that the double torpedo attacks were made. His impression of the method of the double torpedo discharge was now confirmed.

The airmen reported that the *Sea Lion* was being repeatedly hit, and that her position must be anything but comfortable.

The bombardment continued from the two powerful ships that were left, one east, one west, and Evered was about to take the desperate course of ordering the smaller of the cruisers left him, No. 2, to sink herself in the entrance to the inlet, in the forlorn hope of imprisoning the *Sea Lion*, notwithstanding the report of the airmen, until help should arrive. But it was too late. The airmen reported the *Sea Lion* moving. Finding that she was being badly mauled in a position where she could not make efficient reply with her own guns, or considering that the havoc she had wrought outside now made her chances good, she had decided to come out.

At the best pace at which the turn could be safely negotiated, she emerged, a target for those of her enemies who could now bring their direct fire to bear. These were, to begin with, the *Sagitta* and the two cruisers Nos. 2 and 13 of the original line.

Realizing that when coming out he would be for the moment at a disadvantage, the Martian commander had planned a diversion. The third of the underwater craft now fired her torpedoes. A bright object in the water was seen to flash past the *Sagitta*, and at the same moment an explosion amidships of cruiser No. 15 almost blew that vessel out of the water. She sank at once.

Immediately on receiving news that the *Sea Lion* was coming out, the Commodore had signalled the battleship and battle-cruiser to come up with every ounce of steam. Their guns were soon centered on the *Sea Lion*, and as soon as the latter was clear of the turn, her guns began to thunder their reply, while she made a south-westerly course, at her utmost speed.

Her direction took her very near the small cruiser No. 2, and that unfortunate vessel received the full weight of the *Sea Lion*'s metal as she passed. She was reduced to a flaming and sinking wreck.

The *Sagitta*'s escape from the torpedo that had been aimed at her had been doubtless in consequence of the fact that she was in the act of turning as quickly as possible, to keep ahead of the *Sea Lion* in the direction she was going.

They were both now going south-west. Speed was the only thing they had in common and in which they were about equal, for in size, armour and gun power there was no comparison.

The only two ships remaining that could hope to fight the *Sea Lion*, one battleship and one battle-cruiser, were far astern, and further every minute, for neither had the speed of the escaping vessel.

Sailing a parallel course, the *Sagitta* had the *Sea Lion* astern, somewhat to starboard. The *Sagitta* could have received the same treatment as the last cruiser that had gone down, but the *Sea Lion*, ignoring her, turned her great weapons on her two formidable pursuers. Their smokestacks showed that stokehold and engine-room were doing their

utmost. Their "black squads" were sweating at their furnaces, but the fact remained that they were being left. Nothing short of a lucky shot could have prevented the Martian from achieving his object.

The momentary relief that the Commodore had felt when it first appeared that his enemy had no more devilish novelties to surprise him with, gave way to gloom as he watched the widening distance between pursuers and pursued.

For a moment he saw himself a beaten man. But not yet! For then was the situation saved by the quality that always distinguished Evered—quick and fearless decision. Then was justified his main reason for staying on the *Sagitta*, where the discipline of years and the thorough knowledge of his captain that each member of his crew possessed, ensured that any order he gave, however unprecedented or incomprehensible, would be obeyed, and promptly.

#### The "Sea Lion's" Work

**H**E decided on a desperate venture. He saw that the *Sea Lion*, confident that the *Sagitta* could be blasted out of existence in two minutes at any time when her two great pursuers had been effectively shaken off, was giving the latter her whole attention. He deflected his course slightly, so as to make it converge a little on that of the *Sea Lion*. He himself took the helm and gave the order, "Every man on board save three stokers and the chief engineer is to take a life belt and go on deck."

The officers receiving the order, thought him mad, but they had seen so many strange things this last hour that without hesitation they saw it done. When all the men were on deck he addressed his officers:

"I am going to take the *Sagitta* across the *Sea Lion's* bows," he said—"if I can. Explain to the men. Every man on board, yourself included, is to throw himself overboard at the word. I remain in the conning tower. Now go on deck and see that all go over at my signal. Send me the chief engineer."

A minute later, alone with the latter, he said, "Thompson, get five life belts handy. You and I and the three men below go together. Be sure you jump when I jump. Slow down a little. I want the *Sea Lion* to creep up."

The *Sagitta*'s speed was let down a couple of knots. The Commodore, with his hand on the conning tower wheel, stood motionless. He watched the *Sea Lion*. She was engaged in a strenuous fight with her two powerful opponents. If the commander of the *Sea Lion* read the position respecting himself merely as indicating that the *Sea Lion* was the faster boat, all would be well, but if he suspected, and brought his heavy guns to bear, blowing the *Sagitta* out of the water before the object was attained, then all was lost.

The fate of the world hung upon that *if*.

Slowly, and steadily, he was being overtaken. The tension was terrible. Nerves of steel were wanted, and were not lacking.

The moment arrived. The signal to the deck was given, and obeyed with one splash. The order had been held back to the last possible second, and it was well.

"Full speed ahead," he signalled, and his secret was given away. The *Sagitta*, well named "the Arrow," leapt like a greyhound from the leash.

The Commodore set his teeth at what he saw. It was a question of a second or two.

The great guns of the *Sea Lion*, now so close upon him, for a moment ceased their thunder. Their smoking muzzles were coming round. He knew what to expect.

But his moment had also come. He put his helm to port; not so hard as to stop her way, but at the speed she was going its influence was enormous. She came round like a top. The *Sea Lion* evidently ported her helm too, but that long and heavy vessel had nothing like the handiness of the *Sagitta*. She could not answer before the crash was inevitable.

The Commodore had at the same moment signalled "all hands on deck," and as this had been awaited, the five men took the water together. A few seconds later, and at the instant judged to a nicety by the Commodore, the *Sea Lion* crashed into the side of the doomed cruiser.

The *Sagitta* was nearly cut in two. No more would the clean lines of this arrow of the seas skim their surface, but in the moment when she sacrificed all her grace and beauty, she did a greater service to the world than her life could ever have accomplished.

She clung to the bows of her enemy as if conscious of her mission.

The battle-cruiser was fast coming up, and a few miles in her rear, the battleship. Flight was out of the question, and the *Sea Lion* determined to fight. Backing, she succeeded in disengaging herself of the wreck of the *Sagitta*, and turned on her approaching antagonists. Meanwhile she was herself taking ever-increasing punishment as the distance diminished.

The concentrated fire of the *Sea Lion* was terrific. Her ten 12-inch guns were still undamaged. Her crew worked them like fiends. Partly in consequence of the more rapid handling of the machinery of loading, but principally because every shot without exception scored a hit on some vital spot of her antagonist, her fire was at least trebled in effectiveness.

#### Blowing Up the "Sea Lion"

UNDER this withering treatment no vessel could stand up long, but the commander of the *Sea Lion* knew that her own sands were running out.

It was evidently her aim, with a fury of bombardment, to sink these formidable enemies. Soon she had the battle-cruiser out of action, in a sinking condition. Thus she had reduced her fourteen enemies to one, and the battle to a duel. In achieving this, however, she herself had suffered terribly. Her main battery was now reduced to one gun still workable; she was aflame from end to end, as it seemed, from bridge to keel.

But her one gun was promptly turned upon her remaining enemy, the Japanese battleship, and worked with absolute precision. Suddenly she turned towards her foe. This manoeuvre had apparently not been expected on board the Japanese battleship, and had the *Sea Lion* responded quickly, a collision would have been inevitable. It was al-

most a miracle that the *Sea Lion* could be handled at all.

The Commodore, treading water, saw the import of the Martian's manoeuvre. If she rammed the Japanese ship and even one of her demon crew got on board, the fight would be lost.

But that crowning catastrophe was not to be. A lucky shot went through the gaping bows of the *Sea Lion* and exploded her magazine. That finished her.

A damaged battleship and two derelict cruisers were all that remained of the fleet that so short a time before had surrounded the island, almost ashamed of its strength.

But there was another arrival. Unseen by any, none having eyes for anything but the drama being enacted before them, another cruiser of medium size, and flying the German flag, had come up in time to witness the final scene and the awful act that followed, the shooting of the struggling wrecks left of the *Sea Lion*'s crew.

With the outward appearance of humanity, and acting the part to perfection, with piteous cries and arms outstretched in supplication, they made the work hard to accomplish; but it was done.

One man alone appeared unmoved by it—the captain of the new-comer. Turning to him who stood beside him, he said, "That Japanner knows his business. When your enemy is down, hammer him. That is war!"

"In this case it is necessary," replied Professor Rudge coldly. "Will you, Herr Captain, do what you can to save the men of our side, now drowning?"

Of the two cruisers that had been damaged in the blowing up of the battleship west of the island, there had remained undamaged three boats, and these had during the fight done good salvage work among the floating men from the cruisers north of the island. Many more were now rescued, including the Commodore and his crew, all save two that had been caught by the *Sagitta*'s screws through jumping over incautiously.

But it had been a sanguinary action. Of nearly ten thousand men, less than half now remained.

When all the survivors had been rescued, the Commodore signalled from the Japanese vessel to ask Professor Rudge to come aboard.

When Professor Rudge reached the deck of the battleship it presented the appearance of a gigantic scrap-heap. Steel and iron lay everywhere, torn and twisted into fantastical shapes. He gripped Evered's hand, and warmly congratulated him upon his victory.

"I don't feel like being congratulated," said the Commodore sadly. "I went into the fight with overwhelming odds, and the cost has been too terrible."

"The odds," said the Professor, "were never in your favour. You contended with the unknown."

"And still do, I fear. That is why I wanted to speak to you while we have a short hour of daylight left. When it's a question of the unknown, as you call it, you can probe it further than I can."

"You do not consider the fight over?" asked the Professor.

Commodore Evered then gave a short account of what had happened, specially emphasizing the

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fact that the Martian submarine craft were still unaccounted for.

"You are right," said Professor Rudge, when he had heard him; "the last of the invaders is not killed. How unfortunate I was not a couple of hours earlier!"

"Something should have been done differently?"

"No, no," was the hasty reply; "I did not mean that at all. My regret is that I missed seeing the aerial bombs."

"They were terrible," said the Commodore. "There was no fighting against them. Our success is simply because they hadn't more of them."

"You see, Evered," said the Professor, the fight having for the moment taken second place in his thoughts, "they prove that the Martians have solved the problem of that force which more completely than any other baffles our imagination—gravitation; not only solved, but that they can handle and employ it."

"They were efficient weapons," said Commodore Evered, his attention fixed on the fight.

"When man has solved that," said the Professor, his mind still on the scientific problem, "his science will have rendered war impossible, if his moral judgment has not already done so."

"No doubt," said the Commodore, his mind on the surviving Martians in the submarines. The balls were finished; the other weapon, perhaps not.

"How," he added, "shall we deal with the submarines?"

"Any danger we have," said Rudge, "is, I think, a question of the depth of water surrounding the island. How do we stand respecting that?"

"We are on the northern rim of the Tuscarora basin. South, east and west, we are in great depths at once. Even to the north we get 1,000 fathoms between us and the nearest land."

"Then," said Professor Rudge, "we have them. It is practically certain these are hastily made things, capable of crawling along the bottom, rising and possibly able to direct their movements to some extent then, to be used as mere *points d'appui* for the two weapons each discharged."

"But how are we to catch them?"

"By waiting and watching. They are confined to the neighbourhood of the island, and must come up not unfrequently for air."

"Then," said the Commodore, "it is a work principally for the airmen."

He gave instructions for the seaplanes to keep a keen look-out around the island until too dark for observation, and to drop depth charges when sure of their mark.

The German captain was ordered to make for the nearest point where the good news could be given to the world. This he at once did.

The Commodore then ordered the damaged cruisers under no circumstances to beach themselves during the night, whatever the difficulty in keeping afloat, but to sink rather than approach the island.

Searchlights and star shells lent to the short night almost the light of day. It was decided to deal with the submarines before searching the island.

At dawn the seaplanes were up again, circling round the island. It was eight o'clock when two submarines were observed crawling toward the

shoaling water near the eastern end of the island. A moment afterwards a third was seen. The Martians probably knew that their position was hopeless, and they were making for the island as a mere alternative to being suffocated.

They were observed to dive out from under their vessels, but before ever they reached the surface they were bombed and destroyed. There was but one Martian in each. The vessels themselves were, as Professor Rudge had anticipated, of simple construction, not enclosed, but constructed on the diving bell principle.

The rest of the day was devoted to searching the island and making certain that nothing was left alive there as big as a rat.

"And now," said Commodore Evered, as the island was left astern at the pace of the two lame ducks, "only the shouting remains!"

## The Reward

THE home-coming of Professor Rudge and Commodore Evered was historic. The demonstrations of gratitude and enthusiasm were energized by the tremendous reaction after the torturing days of suspense.

Professor Rudge had himself experienced how great can be the force of reaction. On the evening of that great day in the North Pacific he almost collapsed. A load that had pressed heavily and long then rolled from his shoulders. He could look indulgently upon the scenes of "carnival" that celebrated, first the great news, and later the return of the men who had saved humanity from the most awful danger that had ever threatened it.

Joy bells rang and Te Deums were sung throughout all Christendom, and, with the votive offerings made on as many shrines outside it, expressed a world's thanks for its deliverance.

Honours were heaped on the two chief heroes of the occasion, and Dr. Anderson was not forgotten. Commodore Evered received the K.C.M.G., V.C. and D.S.O., and was promoted to be Admiral for his "splendid initiative and distinguished service." Never had there been so popular a promotion.

"There you have the whole reason of it in fact," said Admiral Benson. He remained a disgruntled man. His attitude becoming known, made him so unpopular that he had to resign. His last words on retiring were that whatever might be said about "distinguished service," "splendid initiative" was more than he could stand in view of the number of men that had been shot for less.

No one man could have staggered under the weight of the Orders, Crosses, Stars, Medals, and Degrees that showered on Sir Stanley Rudge. He accepted it all gracefully. Such things left him unmoved.

## True Wisdom Is to Be Happy

EVEN before his landing, his mind seemed to be running on other things. He had fits of introspection, and what he saw surprised him, and the first impulse was to resist. But it has been well said that if one kicks Nature out by the door she comes in by the window. There are some toils in which man struggles in vain. Professor Rudge was in love.

It was not long before May Treherne knew, be-

fore a word was spoken, that she was destined to be Lady Rudge.

No one could have been less surprised than Professor McFaden, when he was told of the engagement.

"*Quos deus vult—*" said the old cynic; but he did not mean it. There were, in fact, no more genuinely sincere congratulations than his.

THE END.

"I never knew," said May one day, mischievously, during their short engagement, "that professors could ever fall in love!"

"Why not?" asked Rudge.

"I always thought they were much too wise," she said.

"True wisdom," he replied, "is to be happy, but few have such wisdom."

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# The MOON HOAX

~ By Richard Adams Locke ~



"We were thrilled with astonishment to perceive successive flocks of large winged creatures . . . descend with a slow motion from the cliffs."

## Introduction

**A**LMOST 91 years ago, in August 1835, what may be termed a classic hoax was perpetrated upon the public. At that time the younger Herschel, the famous astronomer, was at the Cape of Good Hope, South Africa, and the hoax described the erection of a gigantic telescope, under his auspices, powerful enough to identify the poppies which were supposed to grow upon the moon. The story was accepted by thousands of people as the truth. We give (at the end of story) quotations from newspapers of the period, showing that the editors of the day in many cases commented upon it as absolutely credible and authentic. But it was not long before its true nature was ascertained and the hoax received the title which it has borne ever since—"The Moon Hoax." It has been reprinted in extenso with comments, over and over again.

We take pleasure in presenting our readers with the full text.

In August, 1835, the New York Sun, at that time a paper of rather small circulation, published a description of alleged discoveries in the moon, made by means of a gigantic telescope. The article was published in daily instalments during the last week of August, 1835, and excited wide-spread attention and for all its absurdities was accepted as literally true by a great number of people in this country. The circulation of the paper at once increased, it is said to some 50,000, which in those days was a very large figure.

We have had in our hands the original copies of the 90-year-old paper, in which the Hoax appeared, —a little four-page production, containing certainly a minimum of news, a large percentage of advertisements, and all printed in quite small type. The successive instalments of the article began in each issue on the front page on the right, with a very inconspicuous heading, for the New York Sun of three generations ago was quite innocent of the use of our present-day scare-heads. The article was written by Richard Adams Locke, a well-known newspaper writer of those days, who managed in spite of numerous blunders—intentional perhaps?—and impossibilities given in the text, to produce a wonderfully picturesque article.

The 24-ft. lens of the telescope required a high

degree of credibility to be believed in, but when we are told that achromatism was reached by running two kinds of molten glass simultaneously into the mold, the absurdity is so manifest, that it is a wonder that Locke had dared to write it.

"Perfectly square" crystals are pronounced to be amethyst; this mineral is never square, but hexagonal.

The paper is said to have been published in a supplement of the Edinburgh Journal of Science which in 1835 had ceased to be issued under that name. Then the identification of flowers in the moon, the description of the peculiar formation of the eyelids of animals there, and a mass of other absurdities are such patent impossibilities, that it seems incredible that the story was believed by thousands of people. But perhaps the worst detail of all is a rather involved attempt to describe the magnification and projection of the focal image and its illumination, as if that were possible, by the oxy-hydrogen light, which curious suggestion, is supposed to have made Sir David Brewster leap half way to the ceiling with delight. This alone should have sufficed to show the absurdity of the whole.

One curious thing is a coincidence, which approaches prophecy. The lens is described as twenty-four feet (288 inches) in diameter. Within a few days of this writing a report has been published that a 300-inch reflecting telescope is proposed for the Mount Wilson observatory; a reflecting mirror a foot greater in diameter than the fictitious refracting lens of the Moon Hoax.

Another such coincidence is that the telescope had no tube and this is in line with the modern construction of reflecting instruments. The telescope of the Moon Hoax, as far as the somewhat confused account can be understood, was a combined refracting and reflecting instrument. The 24-foot objective was described as a refracting lens, with an average thickness of about  $2\frac{1}{2}$  inches.

The lens was supposed to have been cast on January 27, 1834, to have been taken out of the mold not over ten days later, and to have been finished and shipped on a vessel for the Cape of Good Hope about eight months later. This would have been a wonderful record for speed of production.

## Great Astronomical Discoveries

Lately made by SIR JOHN HERSCHEL, LL.D., F.R.S., etc.

### At the Cape of Good Hope

First published in the New York Sun in August and September, 1835, from the supplement to the Edinburgh Journal of Science



**N** THIS unusual addition to our Journal, we have the happiness of making known to the British public, and thence to the whole civilized world, recent discoveries in Astronomy which will build an imperishable monument to the age in which we live, and confer upon the present generation of the human race a proud distinction through all future time. It has been poetically said, that the stars of heaven are the hereditary regalia of man, as the intellectual sovereign of the animal creation. He

may now fold the Zodiack around him with a loftier consciousness of his mental supremacy.

It is impossible to contemplate any great Astronomical discovery without feeling closely allied to a sensation of awe, and nearly akin to those with which a departed spirit may be supposed to discover the realities of a future state. Bound by the irrevocable laws of nature to the globe on which we live, creatures "close shut up in infinite expanse," it seems like acquiring a fearful supernatural power when any remote mysterious works of the Creator

yield tribute to our curiosity. It seems almost a presumptuous usurpation of powers denied us by the divine will, when man, in the pride and confidence of his skill, steps forth, far beyond the apparently natural boundary of his privileges, and demands the secrets and familiar fellowship of other worlds. We are assured that when the immortal philosopher to whom mankind is indebted for the thrilling wonders now first made known, had at length adjusted his new and stupendous apparatus with a certainty of success, he solemnly paused several hours before he commenced his observations, that he might prepare his own mind for discoveries which he knew would fill the minds of myriads of his fellow-men with astonishment, and secure his name a bright, if not transcendent conjunction with that of his venerable father to all posterity. And well might he pause! From the hour the first human pair opened their eyes to the glories of the blue firmament above them, there has been no accession to human knowledge at all comparable in sublime interest to that which he has been the honored agent in supplying; and we are taught to believe that, when a work, already preparing for the press, in which his discoveries are embodied in detail, shall be laid before the public, they will be found of incomparable importance to some of the grandest operations of civilized life. Well might he pause! He was about to become the sole depository of wondrous secrets which had been hid from the eyes of all men that had lived since the birth of time. He was about to crown himself with a diadem of knowledge which would give him a conscious pre-eminence above every individual of his species who then lived, or who had lived in the generations that are passed away. He paused ere he broke the seal of the casket which contained it.

#### The Author Begins Intro- ducing His Characters

**T**O render our enthusiasm intelligible, we will state at once, that by means of a telescope of vast dimensions and an entirely new principle, the younger Herschel, at his observatory in the Southern Hemisphere, has already made the most extraordinary discoveries in every planet of our solar system; has discovered planets in other solar systems; has obtained a distinct view of objects in the moon, fully equal to that which the unaided eye commands of terrestrial objects at the distance of a hundred yards; has affirmatively settled the question whether this satellite be inhabited, and by what order of beings; has firmly established a new theory of cometary phenomena; and has solved or corrected nearly every leading problem of mathematical astronomy.

For our early and almost exclusive information concerning these facts, we are indebted to the devoted friendship of Dr. Andrew Grant, the pupil of the

elder, and for several years past the inseparable coadjutor of the younger Herschel. The amanuensis of the latter at the Cape of Good Hope, and the indefatigable superintendent of his telescope during the whole period of its construction and operation, Dr. Grant has been enabled to supply us with intelligence equal, in general interest at least, to that which Dr. Herschel himself has transmitted to the Royal Society. Indeed our correspondent assures us that the voluminous documents now before a committee of that institution contain little more than details and mathematical illustrations of the facts communicated to us in his own ample correspondence. For permission to indulge his friendship in communicating this invaluable information to us, Dr. Grant and ourselves are indebted to the magnanimity of Dr. Herschel, who, far above all mercenary considerations, has thus signally honored and rewarded his fellow-laborer in the field of science. The engravings of lunar animals and other objects, and of the phases of the several planets, are accurate copies of drawings taken in the observatory by Herbert Home, Esq., who accompanied the last powerful series of reflectors from London to the Cape, and superintended their erection; and he has thus recorded the proofs of their triumphant success. The engravings of the belts of Jupiter is a reduced copy of an imperial folio drawing by Dr. Herschel himself, and contains the results of his latest observation of that planet. The segment of the inner ring \* of Saturn is from a large drawing by Dr. Grant.

We first avail ourselves of the documents which contain a description and history of the instrument by which these stupendous discoveries have been made. A knowledge of one is essential to the credibility of the other.

#### The Younger Herschel's Telescope

**T**HE MOON HOAX, published several generations ago, was perhaps the greatest scientific hoax that was ever perpetrated upon a credulous public. At that time, when there were no cables and no radio, and communication was slow, it was a simple matter to spring such a hoax, where today it would not last twenty-four hours, because verification or denial would speedily be brought about.

Nevertheless the author of THE MOON HOAX wrote a charming story that will live forever. In it there is excellent science, but in many spots we believe the author purposely "planted" a number of obvious mistakes, which should have been spotted at once by those well versed in science of the day. This, however, did not occur, and the story was swallowed "hook, line, and sinker." See how many mistakes you can find!

Many moon stories have been published since THE MOON HOAX, but this remains one of the finest pieces of imagination that has ever appeared.

of light from objects so highly magnified rendered them less distinct than when viewed with a power of a third or fourth of this extent. Accordingly the powers which he generally applied when observing the moon or planets, and with which he made his most interesting discoveries, ranged from 220, 460, 750, and 900 times; although, when inspecting the double and treble fixed stars, and the more distant nebulae, he frequently applied the full capacity of his instrument. The law of optics, that an object becomes dim in proportion as it is magnified, seemed, from its exemplification in this powerful telescope, to form an insuperable boundary to further

discoveries in our solar system. Several years, however, prior to the death of this venerable astronomer, he conceived it practicable to construct an improved series of parabolic and spherical reflectors, which, by uniting all the meritorious points in the Gregorian and Newtonian instruments, with the highly interesting achromatic discovery of Dolland, would, to a great degree, remove the formidable obstruction.

His plan evinced the most profound research in optical science, and the most dexterous ingenuity in mechanical contrivance; but accumulating infirmities, and eventually death, prevented its experimental application. His son, the present Sir John Herschel, who had been nursed and cradled in the observatory, and a practical astronomer from his boyhood, was so fully convinced of the value of the theory, that he determined upon testing it, at whatever cost. Within two years of his father's death he completed his new apparatus, and adapted to the old telescope with nearly perfect success. He found that the magnifying power of 6,000 times, when applied to the moon, which was the severest criterion that could be selected, produced, under these new reflectors, a focal object of exquisite distinctness, free from every achromatic obscurity, and containing the highest degree of light which the great speculum could collect from that luminary.

The enlargement of the angle of vision which was thus acquired, is ascertained by dividing the moon's distance from the observatory by the magnifying power of the instrument; and the former being 240,000 miles, and the latter 6,000 times, leaves a

quotient of 40 miles as the apparent distance of that planet from the eye of the observer. Now it is well known that no terrestrial object can be seen at a greater distance than this, with the naked eye, even from the most favorable elevations. The rotundity of the earth prevents a more distant view than this with the most acute natural vision, and from the highest eminences; and, generally, objects seen at this distance are themselves elevated on mountainous ridges. It is not pretended, moreover, that this forty miles telescopic view of the moon presented its objects with equal distinctness, though it did in equal size to those of the earth, so remotely stationed.

#### Discussing the Telescope's Power

**T**HE elder Herschel had nevertheless demonstrated, that with a power of 1,000 times, he could discern objects in this satellite of not more than 122 yards in diameter. If therefore the full capacity of the instrument had been elicited by the new apparatus of reflectors constructed by his son, it would follow, in mathematical ratio, that objects could be discerned of not more than 22 yards in diameter. Yet in either case they would be seen as mere feeble, shapeless points, with no greater conspicuity than they would exhibit up-

on earth to the unaided eye at the distance of forty miles. But although the rotundity of the earth presented no obstruction to a view of these astronomical objects, we believe Sir John Herschel never insisted that he had carried out these extreme powers of the telescope in so full a ratio. The deficiency of light, though greatly economised and concentrated, still maintained some inverse proportion to the

THE  
**MOON HOAX;**  
 OR,  
 A DISCOVERY THAT THE  
 MOON  
 HAS A VAST POPULATION OF  
 HUMAN BEINGS.  
 BY  
 RICHARD ADAMS LOCKE.

Illustrated with a View of the Moon,

AS SEEN BY LORD ROSSE'S TELESCOPE.

*(The circle will interest one half of us, because that I could discover nothing in it, but the other appeared to me two stars planted with luminous stems, that were covered with frost and diamonds, and interwoven with a thousand little shining stars that ran among them. I could see persons dressed in glistening habits with garlands upon their heads, passing among the stars, lying down by the sides of fountains, or reclining on beds of flowers; and could hear a confused hum of singing birds, falling waters, human voices, and musical instruments. Glances grew in me upon the discovery of so beautiful a scene. I wished for the wings of an eagle, that I might fly away to these happy spots; but the genius told me there was no passage to them except through the gauze of death that I saw opening every moment upon the bridge.)*

ADDISON.



NEW YORK:  
 WILLIAM GOWANS,  
 1859.

Above we give the reproduction of the title page of the old pamphlet from which we reprint the story of THE MOON HOAX. A number of such pamphlets appeared at different dates, for it is safe to say that the story stands unique as the greatest newspaper hoax ever perpetrated.

magnitude of the focal image. The advance he had made in the knowledge of this planet, though magnificent and sublime, was but partial and unsatisfactory. He was, it is true, enabled to confirm some discoveries of former observers, and to confute those of others. The existence of volcanoes discovered by his father and by Schroeter of Berlin, and the changes observed by the latter in the volcano in the *Mare Crisium* or *Lucid Lake*, were corroborated and illustrated, as was also the prevalence of far more extensive volcanic phenomena. The disproportionate height attributed to the lunar mountains was corrected for careful admeasurement; whilst the celebrated conical hills, encircling valleys of vast diameter, and surrounding the lofty central hills, were distinctly perceived. The formation which Professor Fraunhofer uncharitably conjectured to be a lunar fortification, he ascertained to be a tabular buttress of a remarkably pyramidal mountain; lines which had been whimsically pronounced roads and canals, he found to be keen ridges of singularly regular rows of hills; and that which Schroeter imagined to be a great city in the neighborhood of *Marius*, he determined to be a valley of disjointed rocks scattered in fragments, which averaged at least a thousand yards in diameter. Thus the general geography of the planet, in its grand outlines of cape, continent, mountain, ocean, and island, was surveyed with greater particularity and accuracy than by any previous observer; and the striking dissimilarity of many of its local features to any existing on our own globe, was clearly demonstrated.

#### Celestial Distances and Time

THE best enlarged maps of that luminary which have been published were constructed from this survey; and neither the astronomer nor the public ventured to hope for any great accession to their developments. The utmost power of the largest telescope in the world had been exerted in a new and felicitous manner to obtain them, and there was no reasonable expectation that a larger one would ever be constructed, or that it could be advantageously used if it were. A law of nature, and the finitude of human skill, seemed united in inflexible opposition to any further improvement in telescopic science, as applicable to the known planets and satellites of the solar system. For unless the sun could be prevailed upon to extend a more liberal allowance of light in these bodies, and they be induced to transfer it, for the generous gratification of our curiosity, what adequate substitute could be obtained? Telescopes do not create light, they cannot even transmit unimpaired that which they receive. That anything further could be derived from human skill in the construction of instruments, the labors of his illustrious predecessors, and his own, left the son of Herschel no reason to hope. Huygens, Fontana, Gregory, Newton, Hadley, Bird, Short, Dolland, Herschel, and many others, all practical opticians, had resorted to every material in any wise adapted to the composition either of lenses or reflectors, and had exhausted every law of vision which study had developed and demonstrated. In the construction of his last amazing specula, Sir John Herschel had selected the most approved amalgams that the ad-

vanced stage of metallic chemistry had combined; and had watched their growing brightness under the hands of the artificer with more anxious hope than ever lover watched the eye of his mistress; and he had nothing further to expect than they had accomplished. He had the satisfaction to know that if he could leap astride a cannon ball, and travel upon its wings of fury for the respectable period of several millions of years, he would not obtain a more enlarged view of the distant stars than he could now possess in a few minutes of time; and that it would require an ultra-railroad speed of fifty miles an hour \* for nearly the live-long year, to secure him a more favorable inspection of the gentle luminary of night. The interesting question, however, whether this light of the solemn forest, of the treeless desert, and of the deep blue ocean as it rolls; whether this object of the lonely turret, of the uplifted eye on the deserted battlefield, and of all the pilgrims of love and hope, of misery and despair, that have journeyed over the hills and valleys of this earth, through all the eras of its unwritten history to those of its present voluminous record; the exciting question, whether this "observed" of all the sons of men, from the days of Eden to those of Edinburgh, be inhabited by beings like ourselves, of consciousness and curiosity, was left for solution to the benevolent index of natural analogy, or to the severe tradition that it is tenanted only by the hoary solitaire whom the criminal code of the nursery had banished thither for collecting fuel on the Sabbath-day.

#### A Curious Idea in Telescopic Practice

THE limits of discovery in the planetary bodies, and in this one especially, thus seemed to be immutably fixed; and no expectation was elevated for a period of several years. But, about three years ago, in the course of a conversational discussion with Sir David Brewster upon the merits of some ingenious suggestions by the latter, in his article on optics in the Edinburgh Encyclopedia (p. 644), for improvements in the Newtonian Reflectors, Sir John Herschel adverted to the convenient simplicity of the old astronomical telescopes that were without tubes, and the object-glass of which, placed upon a high pole, threw its focal image to a distance of 150, and even 200 feet. Dr. Brewster readily admitted that a tube was not necessary, provided the focal image were conveyed into a dark apartment, and there properly received by reflectors. Sir John then said that, if his father's great telescope, the tube alone of which, though formed of the lightest suitable materials, weighed 3,000 lbs., possessed an easy and steady mobility with its heavy observatory attached, an observatory movable without the incumbrance of such a tube, was obviously practical. This also was admitted, and the conversation became directed to that all-invincible enemy—the paucity of light in powerful magnifiers. After a few moments' silent thought, Sir John diffidently inquired whether it would not be possible to effect a transfusion of artificial light through the focal object of vision! Sir David, somewhat startled at the originality of the idea, paused awhile, and then hesitatingly referred to the refrangibility of rays, and the angle of incidence. Sir John, grown more confident, adduced the example of the Newtonian

\*This was written in 1835 in the first days of railroads.—Ed.

Reflector, in which the refrangibility was corrected by the second speculum, and the angle of incidence restored by the third. "And," continued he, "why cannot the illuminated microscope, say the hydro-oxygen, be applied to render distinct, and, if necessary, even to magnify the focal object?" Sir David sprung from his chair in an ecstacy of conviction, and leaping half-way to the ceiling, exclaimed, "Thou art the man!" Each philosopher anticipated the other in presenting the prompt illustration that if the rays of the hydro-oxygen microscope, passed through a drop of water containing the larvae of a gnat and other objects invisible to the naked eye, rendered them not only keenly but firmly magnified to dimensions of many feet; so could the same artificial light, passed through the faintest focal object of the telescope, both distinctify (to coin a new word for an extraordinary occasion) and magnify its feeblest component members. The only apparent desideratum was a recipient for the focal image which should transfer it, without refranging it, to the surface on which it was to be viewed under the revivifying light of the microscopic reflectors. In the various experiments made during the few following weeks, the co-operative philosophers decided that a medium of the purest plate glass (which it is said they obtained, by consent, be it observed, from the shop window of Mons. Desganges, the jeweller to his ex-majesty Charles X., in High street) was the most eligible they could discover. It answered perfectly with a telescope which magnified 100 times, and a microscope of about thrice that power.

#### The Great Telescope Provided for Financially

**S**IIR JOHN HERSCHEL then conceived the stupendous fabric of his present telescope. The power of his father's instrument would still leave him distant from his favorite planet nearly forty miles, and he resolved to attempt a greater magnifier. Money, the wings of science as the sinews of war, seemed the only requisite, and even the acquisition of this which is often more difficult than the task of Sisyphus he determined to achieve. Fully sanctioned by the high optical authority of Sir David Brewster, he laid his plan before the Royal Society, and particularly directed to it the attention of His Royal Highness the Duke of Sussex the ever munificent patron of science and the arts. It was immediately and enthusiastically approved by the committee chosen to investigate it, and the chairman, who was the Royal President, subscribed his name for a contribution of £10,000, with a promise that he would zealously submit the proposed instrument as a fit object for the patronage of the privy purse. He did so without delay, and his Majesty, on being informed that the estimated expense was £70,000, naively inquired if the costly instrument would conduce to any improvement in *navigation?* On being informed that it undoubtedly would, the sailor-king promised a *carte blanche* for the amount which might be required.

#### The 24-Foot Lens

**S**IIR JOHN HERSCHEL had submitted his plans and calculations in adaptation to an object-glass of twenty-four feet in diameter; just times the size of his venerable father's,

For casting this ponderous mass, he selected the large glass-house of Messrs. Hartly and Grant, (the brother of our invaluable friend Dr. Grant) at Dumbarton. The material chosen was an amalgamation of two parts of the best crown with one flint glass, the use of which, in separate lenses, constituted the great achromatic discovery of Dolland. It had been found, however, by accurate experiments, that the amalgam would as completely triumph over every impediment, both from refrangibility and discoloration, as the separate lenses. Five furnaces of the metal, carefully collected from productions of the manufactory, in both the kinds of glass, and known to be respectively of nearly perfect homogenous quality, were united, by one grand conductor, to the mould; and on the third of January, 1833, the first cast was effected. After cooling eight days, the mould was opened, and the glass found to be greatly flawed within eighteen inches of the centre. Notwithstanding this failure, a new glass was more carefully cast on the 27th of the same month, which on being opened during the first week of February, was found to be immaculately perfect, with the exception of two slight flaws so near the line of its circumference that they would be covered by the copper ring in which it was designed to be enclosed.

The weight of this prodigious lens was 14,826 lbs. or nearly seven tons after being polished; and its estimated magnifying power 42,000 times. It was therefore presumed to be capable of representing objects in our lunar satellite of little more than eighteen inches in diameter, provided its focal image of them could be rendered distinct by the transmutation of artificial light. It was not, however, upon the mere illuminating power of the hydro-oxygen microscope, as applied to the focal pictures of this lens, that the younger Herschel depended for the realization of his ambitious theories and hopes. He calculated largely upon the almost illimitable applicability of this instrument as a second magnifier, which would supersede the use, and infinitely transcend the powers of the highest magnifiers in reflecting telescopes.

So sanguinely indeed did he calculate upon the advantages of this splendid alliance, that he expressed confidence in his ultimate ability to study even the entomology of the moon, in case she contained insects upon her surface. Having witnessed the completion of this great lens, and its safe transportation to the metropolis, his next care was the construction of a suitable microscope, and of the mechanical frame-work for the horizontal and vertical action of the whole. His plans in every branch of his undertaking having been intensely studied, even to their minutest details, were easily and rapidly executed. He awaited only the appointed period at which he was to convey his magnificent apparatus to its destination.

#### The British Board of Longitude Interested in the Work

**A**CORRESPONDENCE had for some time passed between the Boards of England, France, and Austria, with a view to improvements in the tables of longitude in the southern hemisphere; which are found to be much less accurate than those of the northern. The high opinion entertained by the British Board

of Longitude of the principles of the new telescope, and of the profound skill of its inventor, determined the government to solicit his services in observing the transit of Mercury over the sun's disk, which will take place on the 7th of November in the present year: and which, as it will occur at 7h. 47m. 55s. night, conjunction, mean time; and at 8h. 12m. 22s. middle, true time, will be invisible to nearly all the northern hemisphere. The place at which the transits of Mercury and of Venus have generally been observed by the astronomers of Europe, when occurring under these circumstances, is the Cape of Good Hope; and no transit of Venus having occurred since the year 1769, and none being to occur before 1874, the accurate observation of the transits of Mercury, which occur more frequently, has been found of great importance both to astronomy and navigation. To the latter useful art, indeed, the transits of Mercury are nearly as important as those of Venus; for although those of the latter planet have the peculiar advantage of determining exactly the great solar parallax, and thence the distances of all the planets from the sun, yet the transits of Mercury, by exactly determining the place of its own node, independently of the parallax of the great orb, determine the parallax of the earth and moon; and are therefore especially valuable in lunar observations of longitude. The Cape of Good Hope has been found preferable, in these observations, to any other station in the hemisphere. The expedition which went to Peru, about the middle of the last century, to ascertain, in conjunction with another in Lapland, the true figure of the earth, found the attraction of the mountainous regions so strong as to cause the plumb-line of one of their large instruments to deflect seven or eight seconds from the true perpendicular; whilst the elevated plains at the Cape unite all the advantages of a lucid atmosphere with an entire freedom from mountainous obstruction. Sir John Herschel, therefore, not only accepted the appointment with high satisfaction, but requested that it might commence at least a year before the period of the transit, to afford him time to bring his ponderous and complicated machinery into perfect adjustment, and to extend his knowledge of the southern constellations.

His wish was immediately assented to, and his arrangements being completed, he sailed from London on the 4th of September, 1834, in company with Dr. Andrew Grant, Lieutenant Drummond, of the Royal Engineers, F.R.A.S., and a large party of the best English mechanics. They arrived, after an expeditious and agreeable passage, and immediately proceeded to transport the lens, and the frame of the large observatory, to its destined site, which was a piece of table-land of great extent and elevation, about thirty-five miles to the north-east of Capetown; and which is said to be the very spot on which De la Caille, in 1750, constructed his invaluable solar tables, when he measured a degree of the meridian, and made a great advance to exactitude in computing the solar parallax from that of Mars and the Moon. Sir John accomplished the ascent to the plains by means of two relief teams of oxen, of eighteen each, in about four days; and, aided by several companies of Dutch boors, proceeded at once to the erection of his gigantic fabric,

#### A General Description of the Plant at the Cape of Good Hope

**T**HE ground plan of the structure is in some respects similar to that of the Herschel telescope in England, except that instead of circular foundations of brick-work, it consists of parallel circles of railroad iron, upon wooden framework; so constructed that the turn-outs, or rather turn-ins, from the largest circle, will conduct the observatory, which moves upon them, to the innermost circle, which is the basis of the lens-works; and to each of the circles that intervene. The diameter of the smallest circle is twenty-eight feet: that of the largest our correspondent has singularly forgotten to state, though it may be in some measure computed from the angle of incidence projected by the lens, and the space occupied by the observatory. The latter is a wooden building fifty feet square and as many high, with a flat roof and gutters of thin copper. Through the side proximate to the lens, is an aperture four feet in diameter to receive its rays, and through the roof another for the same purpose in meridional observations. The lens, which is inclosed in a frame of wood, and braced to its corners by bars of copper, is suspended upon an axis between two pillars which are nearly as high as those which supported the celebrated quadrant of Uleg Beg, being one hundred and fifty feet. These are united at the top and bottom by cross-pieces, and strengthened by a number of diagonal braces; and between them is a double capstan for hoisting the lens from its horizontal line with the observatory to the height required by its focal distance when turned to the meridian; and for elevating it to any intermediate degree of altitude that may be needed. This last operation is beautifully regulated by an immense double sextant, which is connected and moves with the axis of the lens, and is regularly divided into degrees, minutes, and seconds; and the horizontal circles of the observatory being also divided into 360 degrees, and minutely subdivided, the whole instrument has the powers and regularity of the most improved theodolite. Having no tube, it is connected with the observatory by two horizontal levers, which pass underneath the floor of that building from the circular basis of the pillars; thus keeping the lens always square with the observatory, and securing to both a uniform and simple movement. By means of these levers, too, a rack and windlass, the observatory is brought to any degree of approximation to the pillars that the altitude of an observation may require; and although, when at its nearest station it cannot command an observation with the great lens within about fifteen degrees of the meridian, it is supplied with an excellent telescope of vast power, constructed by the elder Herschel, by which every high degree can be surveyed. The field of view, therefore, whether exhibited on the floor or on the wall of the apartment, has a diameter of nearly fifty feet, and, being circular, it has therefore an area of nearly 1875 feet. The place of all the horizontal movements having been accurately levelled by Lieut. Drummond, with the improved level of his invention which bears his name, and the wheels both of the observatory and of the lens-works being facilitated by

friction-rollers in patent axle-boxes filled with oil, the strength of one man applied to the extremity of the levers is sufficient to propel the whole structure upon either of the railroad circles; and that of two men applied to the windlass is fully adequate to bring the observatory to the basis of the pillars. Both of these movements, however, are now effected by a locomotive apparatus commanded within the apartment by a single person, and showing, by means of an ingenious index, every inch of progression or retrogression.

#### The Preservation of Secrecy

**W**E have not thus particularly described the telescope of the younger Herschel because we consider it the most magnificent specimen of philosophical mechanism of the present or any previous age, but because we deemed an explicit description of its principles and powers an almost indispensable introduction to a statement of the sublime expansion of human knowledge which it has achieved. It was not fully completed until the latter part of December, when the series of large reflectors for the microscope arrived from England; and it was brought into operation during the first week of the ensuing month and year. But the secrecy which had been maintained with regard to its novelty; its manufacture, and its destination, was not less rigidly preserved for several months respecting the grandeur of its success. Whether the British Government were sceptical concerning the promised splendor of its discoveries, or wished them to be scrupulously veiled until they had accumulated a full-orbed glory for the nation and reign in which they originated, is a question which we can only conjecturally solve. But certain it is that the astronomer's royal patrons enjoined a masonic taciturnity upon him and his friends until he should have officially communicated the results of his great experiment. Accordingly, the world heard nothing of him or his expedition until it was announced a few months since in the scientific journals of Germany, that Sir John Herschel, at the Cape of Good Hope, had written to the astronomer-royal of Vienna, to inform him that the portentous comet predicted for the year 1835, which was to approach so near this trembling globe that we might hear the roaring of its fires, had turned upon another scent, and would not even shake a hair of its tail upon our hunting-grounds. At a loss to conceive by what extra authority he had made so bold a declaration, the men of science in Europe who were not acquainted with the secret, regarded his "postponement," as his discovery was termed, with incredulous contumely, and continued to terrorize upon the strength of former predictions.

#### New Lunar Discoveries

Until the 10th of January, the observations were chiefly directed to the stars in the southern signs, in which, without the aid of the hydro-oxygen reflectors, a countless number of new stars and nebulas were discovered. But we shall defer our correspondent's account of these to future pages, for the purpose of no longer withholding from our readers the more generally and highly interesting discoveries which were made in the lunar world. And for this purpose, too, we shall defer Dr. Grant's

elaborate mathematical details of the corrections which Sir John Herschel has made in the best tables of the moon's tropical, sidereal, and synodic revolutions, and of those phenomena of syzygies on which a great part of the established lunar theory depends.

It was about half-past nine o'clock on the night of the 10th, the moon having then advanced within four days of her mean libration, that the astronomer adjusted his instruments for the inspection of her eastern limb. The whole immense power of his telescope was applied, and to its focal image about one-half of the power of his microscope. On removing the screen of the latter, the field of view was covered throughout its entire area with a beautifully distinct, and even vivid representation of *basaltic rock*. Its color was a greenish brown, and the width of the columns, as defined by their interstices on the canvas, was invariably twenty-eight inches. No fracture whatever appeared in the mass first presented, but in a few seconds a shelving pile appeared of five or six columns width, which showed their figure to be hexagonal, and their articulations similar to those of the basaltic formation at Staffa. This precipitous shelf was profusely covered with a dark red flower, "precisely similar," says Dr. Grant, "to the *Papaver Rhoeas*, or rose-poppy of our sublunary cornfields; and this was the first organic production of nature, in a foreign world, ever revealed to the eyes of men."

The rapidity of the moon's ascension, or rather of the earth's diurnal rotation, being nearly equal to five hundred yards in a second, would have effectually prevented the inspection, or even the discovery of objects so minute as these, but for the admirable mechanism which constantly regulates, under the guidance of the sextant, the required altitude of the lens. But its operation was found to be so consummately perfect, that the observers could detain the object upon the field of view for any period they might desire.

#### The Trees on the Moon and the Beautiful Shore

**T**HE specimen of lunar vegetation, however, which they had already seen, had decided a question of too exciting an interest to induce them to retard its exist. It had demonstrated that the moon has an atmosphere constituted similarly to our own, and capable of sustaining organized, and therefore, most probably, animal life. The basaltic rocks continued to pass over the inclined canvas plane, through three successive diameters, when a verdant declivity of great beauty appeared, which occupied two more. This was preceded by another mass of nearly the former height, at the base of which they were at length delighted to perceive that novelty, a lunar forest. "The trees," says Dr. Grant, "for a period of ten minutes, were of one unvaried kind, and unlike any I have seen, except the largest kind of yews in the English churchyards, which they in some respects resemble. These were followed by a level green plain, which, as measured by the painted circle on our canvass of forty-nine feet, must have been more than half a mile in breadth; and then appeared as fine a forest of firs, unequivocal firs, as I have ever seen cherished in the bosom of my native mountains. Wearied with the long continuance of these, we greatly reduced the magnifying power of

the microscope, without eclipsing either of the reflectors, and immediately perceived that we had been insensibly descending, as it were, a mountainous district of a highly diversified and romantic character, and that we were on the verge of a lake, or inland sea; but of what relative locality or extent, we were yet too greatly magnified to determine. On introducing the feeblest acromatic lens we possessed, we found that the water, whose boundary we had just discovered, answered in general outline to the Mare Nubium of Riccoli, by which we detected that, instead of commencing, as we supposed, on the eastern longitude of the planet, some delay in the elevation of the great lens had thrown us nearly upon the axis of her equator. However, as she was a free country, and we not, as yet, attached to any particular province, and moreover, since we could at any moment occupy our intended position, we again slid in our magic lenses to survey the shores of the Mare Nubium. Why Riccoli so termed it, unless in ridicule of Cleomedes, I know not; for fairer shores never angels coasted on a tour of pleasure. A beach of brilliant white sand, girt with wild castellated rocks, apparently of green marble, varied at chasms, occurring every two or three hundred feet, with grotesque blocks of chalk or gypsum, and feathered and festooned at the summit with the clustering foliage of unknown trees, moved along the bright wall of our apartment until we were speechless with admiration. The water, wherever we obtained a view of it, was nearly as blue as that of the deep ocean, and broke in large white billows upon the strand. The action of very high tides was quite manifest upon the face of the cliff for more than a hundred miles; yet diversified as the scenery was during this and a much greater distance, we perceived no trace of animal existence, notwithstanding we could command at will a perspective or a foreground view of the whole. Mr. Holmes, indeed, pronounced some white objects of a circular form, which we saw at some distance in the interior of a cavern, to be bona fide specimens of a large cornu ammonis; but to me they appeared merely large pebbles, which had been chafed and rolled there by the tides. Our chase of animal life was not yet to be rewarded.

#### Beautiful Landscape View

**H**AVING continued his close inspection nearly two hours during which we passed over a wide tract of country, chiefly of a rugged and volcanic character; and having seen few additional varieties of vegetation, except some species of lichen, which grew everywhere in great abundance, Dr. Herschel proposed that we should take out all our lenses, give a rapid speed to the panorama, and search for some of the principal valleys known to astronomers, as the most likely method to reward our first night's observation with the discovery of animated beings. The lenses being removed, and the effulgence of our unutterably glorious reflectors left undiminished, we found, in accordance with our calculations, that our field of view comprehended about 25 miles of the lunar surface, with the distinctiveness of outline and detail which could be procured of a terrestrial object at the distance of two and a half miles; an optical phenomenon which you would find demonstrated in Note 5.

This afforded us the best landscape views we had hitherto obtained, and although the accelerated motion was rather too great, we enjoyed them with rapture. Several of those famous valleys, which are bounded by lofty hills of so perfectly conical a form as to rend them less like works of nature than of art, passed the canvas before we had time to check their flight; but presently a train of scenery met our eye, of features so entirely novel, that Dr. Herschel signalled for the lowest convenient gradation of movement. It was a lofty chain of obelisk-shaped, or very slender pyramids, standing in irregular groups, each composed of about thirty or forty spires, every one of which was perfectly square, and as accurately truncated as the finest specimens of Cornish crystal. They were of a faint lilac hue, and very resplendent. I now thought that we had assuredly fallen on productions of art; but Dr. Herschel shrewdly remarked, that if the Lunarians could build thirty or forty miles of such monuments as these, we should ere now have discovered others of a less equivocal character. He pronounced them quartz formations, of probably the wine-colored amethyst species, and promised us, from these and other proofs which he had obtained of the powerful action of laws of crystallization in this planet, a rich field of mineralogical study.

#### Enormous Amethysts

**O**n introducing a lens, his conjecture was fully confirmed; they were monstrous amethysts, of a diluted claret color, glowing in the intensest light of the sun! They varied in height from sixty to ninety feet, though we saw several of a still more incredible altitude. They were observed in a succession of valleys divided by longitudinal lines of round-breasted hills, covered with verdure and nobly undulated; but what is most remarkable, the valleys which contained these stupendous crystals were invariably barren, and covered with stones of a ferruginous hue, which were probably iron pyrites. We found that some of these curiosities were situated in a district elevated half a mile above the valley of the Mare Fecunditatis, of Mayer and Riccioli; the shores of which soon hove in view. But never was a name more inappropriately bestowed. From "Dan to Beersheba" all was barren, barren—the sea-board was entirely composed of chalk and flint, and not a vestige of vegetation could be discovered with our strongest glasses. The whole breadth of the northern extremity of this sea, which was about three hundred miles, having crossed our plane, we entered upon a wild mountainous region abounding with more extensive forests of larger trees than we had before seen—the species of which I have no good analogy to describe. In general contour they resembled our forest oak; but they were much more superb in foliage, having broad glossy leaves like that of the laurel, and tresses of yellow flowers which hung, in the open glades, from the branches to the ground.

#### The Beautiful Cataracts in the Valley

**T**HESE mountains passed, we arrived at a region which filled us with utter astonishment. It was an oval valley, surrounded, except at a narrow opening towards the south, by

hills, red as the purest vermillion, and evidently crystallized, for wherever a precipitous chasm appeared—and these chasms were very frequent, and of immense depth—the perpendicular sections presented conglomerated masses of polygon crystals, evenly fitted to each other, and arranged in deep strata, which grew darker in color as they descended to the foundations of the precipices. Innumerable cascades were bursting forth from the breasts of every one of these cliffs, and some so near their summits, and with such great force, as to form arches many yards in diameter. I never was so vividly reminded of Byron's simile, "the tail of the white horse in the Revelation." At the foot of this boundary of hills was a perfect zone of woods surrounding the whole valley, which was about eighteen or twenty miles wide, at its greatest breadth, and about thirty in length. Small collections of trees, of every imaginable kind, were scattered about the whole of the luxuriant area; and here our magnifiers blést our panting hopes with specimens of conscious existence. In the shade of the woods on the southeastern side, we beheld continuous herds of brown quadrupeds, having all the external characteristics of the bison, but more diminutive than any species of the *bos* genus in our natural history. Its tail is like that of our *bos grunniens*; but in its semi-circular horns, the hump on its shoulders, and the depth of its dewlap, and the length of its shaggy hair, it closely resembled the species to which I first compared it. It had, however, one widely distinctive feature, which we afterwards found common to nearly every lunar quadruped we have discovered; namely, a remarkable fleshy appendage over the eyes, crossing the whole breadth of the forehead and united to the ears. We could most distinctly perceive this hairy veil, which was shaped like the upper front outline of a cap known to the ladies as Mary Queen of Scots' cap, lifted and lowered by means of the ears. It immediately occurred to the acute mind of Dr. Herschel, that this was a providential contrivance to protect the eyes of the animal from the great extremes of light and darkness to which all the inhabitants of our side of the moon are periodically subjected.

#### Birds and Animals

**T**HE next animal perceived would be classified on earth as a monster. It was of a bluish lead color, about the size of a goat, with a head and beard like him, and a single horn, slightly inclined forward from the perpendicular. The female was destitute of the horn and beard, but had much longer tail. It was gregarious and chiefly abounded on the acclivitous glades of the woods. In elegance of symmetry it rivalled the antelope, and like him it seemed an agile sprightly creature, running with great speed, and springing from the green turf with all the unaccountable antics of a young lamb or kitten. This beautiful creature afforded us the most exquisite amusement. The mimicry of its movements upon our white painted canvas was as faithful and luminous as that of animals within a few yards of the camera obscura, when seen pictured upon its tympan. Frequently when attempting to put our fingers upon its beard, it would suddenly bound away into oblivion as if conscious of our

earthly impertinence; but then others would appear, whom we could not prevent nibbling the herbage, say or do what we would to them.

On examining the centre of this delightful valley, we found a large branching river, abounding with lovely islands, and water-birds of numerous kinds. A species of grey pelican was the most numerous; but black and white cranes, with unreasonably long legs and bill, were also quite common. We watched their pisciverous experiments a long time, in hopes of catching sight of a lunar fish; but although we were not gratified in this respect, we could easily guess the purpose with which they plunged their long necks so deeply beneath the water. Near the upper extremity of one of these islands we obtained a glimpse of a strange amphibious creature, of a spherical form, which rolled with great velocity across the pebbly beach, and was lost sight of in the strong current which set off from this angle of the island. We were compelled, however, to leave this prolific valley unexplored, on account of clouds which were evidently accumulating in the lunar atmosphere, our own being perfectly translucent. But this was itself an interesting discovery, for more distant observers had questioned or denied the existence of any humid atmosphere in this planet."

#### Some Cloudy Nights Interfere with the Observation

**T**HE moon being now low on her descent, Dr. Herschel inferred that the increasing refractory protraction of our labors, and our minds being actually fatigued with the excitement of the high enjoyments we had partaken, we mutually agreed to call in the assistants at the lens, and reward their vigilant attention with congratulatory bumper of the best "East India Particular." It was not, however, without regret that we left the splendid valley of the red mountains, which, in compliment to the arms of our royal patron, we denominated "the Valley of the Unicorn;" and it may be found in Blunt's map, about midway between the Mare Fœcunditatis and the Mare Nectaris.

The nights of the 11th and 12th being cloudy, were unfavorable to observation; but on those of the 13th and 14th further animal discoveries were made of the most exciting interest to every human being. We give them in the graphic language of our accomplished correspondent:—

"The astonishing and beautiful discoveries which we had made during our first night's observation, and the brilliant promise which they gave of the future, rendered every moonlight hour too precious to reconcile us to the deprivation occasioned by these two cloudy evenings; and they were borne with strictly philosophical patience, notwithstanding that our attention was closely occupied in superintending the erection of additional props and braces to the twenty-four feet lens, which we found had somewhat vibrated in a high wind that arose in the morning of the 11th. The night of the 13th (January) was one of pearly purity and loveliness. The moon ascended the firmament in gorgeous splendor, and the stars, retiring around her, left her the unrivalled queen of the hemisphere. This being the last night but one, in the present month, during which we should have an opportunity of inspecting

her western limb, on account of the libration in longitude which would thence immediately ensue, Dr. Herschel informed us that he should direct our researches to the parts numbered 2, 11, 26, and 20 in Blunt's map, and which are respectively known in the modern catalogue by the names of Endymoin, Cleomedes, Langrenus, and Petavius. To the careful inspection of these, and the regions between them and the extreme western rim, he proposed to devote the whole of this highly favorable night.

**The Observation Resumed and an Extinct Volcano Is Observed**

"**T**AKing then our twenty-five miles breadth, and reducing it to a slow movement, we soon found the first very singularly shaped object of our inquiry. It is a highly mountainous district, the loftier chains of which form three narrow ovals, two of which approach each other in slender points, and are united by one mass of hills of great length and elevation; thus presenting a figure similar to that of a long skein of thread, the bows of which have been gradually spread open from their connecting knot. The third oval looks also like a skein, and lies as if carelessly dropped from nature's hand in connection with the other; but that which might fancifully be supposed as having formed the second bow of this second skein is cut open, and lies in scattered threads of smaller hills which cover a great extent of level territory. The ground plan of these mountains is so remarkable that it has been accurately represented in almost every lineal map of the moon that has been drawn; and in Blunt's, which is the best, it agrees exactly with my description. Within the grasp, as it were, of the broken bow of hills last mentioned, stands an oval-shaped mountain, enclosing a valley of an immense area, and having on its western ridge a volcano in a state of terrific eruption. To the north-east of this, across the broken, or what Mr. Holmes called 'the vagabond mountains,' are three other detached oblong formations, the largest and last of which is marked F in the catalogue, and fancifully denominated the Mare Mortuum, or more commonly the 'Lake of Death.' Induced by a curiosity to devine the reason of so sombre a title, rather than by any more philosophical motive, we here first applied our hydro-oxygen magnifiers to the focal image of the great lens. Our twenty-five miles' portion of this great mountain cirus had comprehended the whole of its area, and of course the two conical hills which rise in it about five miles from each other; but although his breadth of view had heretofore generally presented its objects as if seen within a terrestrial distance of two and a half miles, we were, in this instance, unable to discern these central hills with any such degree of distinctness. There did not appear to be any mist or smoke around them, as in the case of the volcano which we had left in the south-west, and yet they were comparatively indistinct upon the canvas. On sliding in the gas-light lens the mystery was immediately solved. They were old craters of extinct volcanoes, from which still issued a heated, though transparent exhalation, that kept them in an apparently oscillatory or trembling motion, most unfavorable to examination.

**The Extinct Volcanoes of the Moon**

"**T**HE craters of both these hills, as nearly as we could judge under this obstruction, were about fifteen fathoms deep, devoid of any appearance of fire, and of nearly a yellowish white color throughout. The diameter of each was about nine diameters of our painted circle, or nearly 450 feet; and the width of the rim surrounding them about 1000 feet; yet notwithstanding their narrow mouths, these two chimneys of the subterranean deep had evidently filled the whole area of the valley in which they stood with the lava and ashes with which it was encumbered, and even added to the height, if not indeed caused the existence of the oval chain of mountains which surrounded it. These mountains, as subsequently measured from the level of some large lakes around them, averaged the height of 2,800 feet; and Dr. Herschel conjectured from this and the vast extent of their abutments, which ran for many miles into the country around them, that these volcanoes must have been in full activity for a million years. Lieut. Drummond, however, rather supposed that the whole area of this oval valley was but the exhausted crater of one vast volcano, which in expiring had left only these two imbecile representatives of its power. I believe Dr. Herschel himself afterwards adopted this probable theory, which is indeed confirmed by the universal geology of the planet. There is scarcely a hundred miles of her surface, not even excepting her largest seas and lakes, in which circular or oval mountainous ridges may not be easily found; and many, very many of these having numerous enclosed hills in full volcanic operation, which are now much lower than the surrounding circles, it admits of no doubt that each of these great formations is the remains of one vast mountain which has burnt itself out, and left only these wide foundations of its ancient grandeur. A direct proof of this is afforded in a tremendous volcano, now in its prime, which I shall hereafter notice. What gave the name of 'The Lake of Death' to the annular mountain I have just described, was, I suppose, the dark appearance of the valley which it encloses, and which, to a more distant view than we obtained, certainly exhibits the general aspect of the waters on this planet. The surrounding country is fertile to excess: between this circle and No. 2 (Endymion), which we proposed first to examine, we counted not less than twelve luxuriant forests, divided by open plains, which waved in an ocean of verdure, and were probably prairies like those of North America. In three of these we discovered numerous herds of quadrupeds similar to our friends the bisons in the Valley of the Unicorn, but of much larger size; and scarcely a piece of woodland occurred in our panorama which did not dazzle our vision with flocks of white or red birds upon the wing.

**Animals and a Beautiful Island**

"**A**T length we carefully explored the Endymion. We found each of the three ovals volcanic and sterile within; but, without, most rich, throughout the level regions around them, in every imaginable production of a bounteous soil. Dr. Herschel has classified not less than thirty-eight species of forest trees, and nearly twice this number of plants, found in this

tract alone, which are widely different to those found in more equatorial latitudes. Of animals, he classified nine species of mammalia, and five of ovipara. Among the former is a small kind of reindeer, the elk, the moose, the horned bear, and the biped beaver. The last resembles the beaver of the earth in every other respect than in its destitution of a tail, and its invariable habit of walking upon only two feet. It carries its young in its arms like a human being, and moves with an easy gliding motion. Its huts are constructed better and higher than those of many tribes of human savages, and from the appearance of smoke in nearly all of them, there is no doubt of its being acquainted with the use of fire. Still its head and body differ only in the points stated from that of the beaver, and it was never seen except on the borders of lakes and rivers, in which it has been observed to immerse for a period of several seconds.

"Thirty degrees farther south, in No. 11, or Cleomedes, an immense annular mountain, containing three distinct craters, which have been so long extinguished that the whole valley around them, which is eleven miles in extent, is densely crowded with woods nearly to the summits of the hills. Not a rod of vacant land, except the tops of these craters, could be described, and no living creature, except a large white bird resembling the stork. At the southern extremity of this valley is a natural archway or cavern, 200 feet high, and 100 wide, through which runs a river which discharges itself over a precipice of grey rock 80 feet in depth, and then forms a branching stream through a beautiful campaign district for many miles. Within twenty miles of this cataract is the largest lake, or rather inland sea, that has been found throughout the seven and a half millions of square miles which this illuminated side of the moon contains. Its width, from east to west, is 198 miles, and from north to south, 266 miles. Its shape, to the northward, is not unlike that of the bay of Bengal, and it is studded with small islands, most of which are volcanic. Two of these, on the eastern side, are now violently eruptive; but our lowest magnifying power was too great to examine them with convenience, on account of the cloud of smoke and ashes which obscured our field of view; as seen by Lieut. Drummond, through our reflecting telescope of 2,000 times, they exhibited great brilliancy. In a bay, on the western side of this sea, is an island 55 miles long, of a crescent form, crowded through its entire sweep with the most superb and wonderful natural beauties, both of vegetation and geology. Its hills are pinnacled with tall quartz crystals, of so rich a yellow and orange hue that we at first supposed them to be pointed flames of fire; and they spring up thus from smooth round brows of hills which are covered as with a velvet mantle. Even in the enchanting little valleys of this winding island we could often see these splendid natural spires, mounting in the midst of deep green woods, like church steeples in the vales of Westmoreland.

Strange Animals and More Beautiful Crystal Pinnacles  
**W**E here first noticed the lunar palm-tree, which differs from that of our tropical latitudes only in the peculiarity of very large crimson flowers, instead of the

spadix protruded from the common calyx. We, however, perceived no fruit on any specimens we saw: a circumstance which we attempted to account for from the great (theoretical) extremes in the lunar climate. On a curious kind of tree-melon we nevertheless saw fruit in great abundance, and in every stage of inception and maturity. The general color of these woods was a dark green, though not without occasional admixtures of every tint of our forest seasons. The hectic flush of autumn was often seen kindled upon the cheek of earliest spring; and the gay drapery of summer in some places surrounded trees leafless as the victims of winter. It seemed as if all the seasons here united hands in a circle of perpetual harmony. Of animals we saw only an elegant striped quadruped about three feet high, like a miniature zebra; which was always in small herds on the green sward of the hills; and two or three kinds of long-tailed birds, which we judged to be golden and blue pheasants. On the shores, however, we saw countless multitudes of univalve shell-fish, and among them some huge flat ones, which all three of my associates declared to be cornu ammonis; and I confess I was here compelled to abandon my sceptical substitution of pebbles. The cliffs all along these shores were deeply undermined by tides; they were very cavernous, and yellow crystal stalactites larger than a man's thigh were shooting forth on all sides. Indeed every rood of this island appeared to be crystallized; masses of fallen crystals were found on every beach we explored, and beamed from every fractured headland. It was more like a creation of an oriental fancy than a distant variety of nature brought by the powers of science to ocular demonstration. The striking dissimilitude of this island to every other we had found on these waters, and its near proximity to the main land, led us to suppose that it must at some time have been a part of it; more especially as its crescent bay embraced the first of a chain of smaller ones which ran directly thither. The first one was a pure quartz rock, about three miles in circumference, towering in naked majesty from the blue deep, without either shore or shelter. But it glowed in the sun almost like a sapphire, as did all the lesser ones of whom it seemed the king. Our theory was speedily confirmed; for all the shore of the main land was battlemented and spired with these unobtainable jewels of nature; and as we brought our field of view to include the utmost rim of the illuminated boundary of the planet, we could still see them blazing in crowded battalions as it were, through a region of hundreds of miles. In fact we could not conjecture where the gorgeous land of enchantment terminated; for as the rotary motion of the planet bore these mountain summits from our view, we became further remote from their western boundary.

Near the Edge of the Moon and Apparently Quantities of Metallic Gold in the Cliffs

**W**E were admonished by this to lose no time in seeking the next proposed object of our search, the Langrenus, or No. 26, which is almost within the verge of the libration in longitude, and of which, for this reason, Dr. Herschel entertained some singular expectations.

"After a short delay in advancing the observa-

tory upon the levers, and in regulating the lens, we found our object and surveyed it. It was a dark narrow lake seventy miles long, bounded on the east, north, and west, by red mountains of the same character as those surrounding the Valley of the Unicorn, from which it is distant to the south-west about 160 miles. This lake, like that valley, opens to the south upon a plain not more than ten miles wide, which is here encircled by a truly magnificent amphitheatre of the loftiest order of lunar hills. For a semicircle of six miles these hills are riven, from their brow to their base, as perpendicularly as the outer walls of the Colosseum at Rome; but here exhibiting the sublime altitude of at least two thousand feet in one smooth, unbroken surface. How nature disposed of the huge mass which she thus prodigiously carved out, I know not; but certain it is that there are no fragments of it left upon the plain, which is a declivity without a single prominence except a billowy tract of woodland that runs in many a wild vagary of breadth and course to the margin of the lake. The tremendous height and expansion of this perpendicular mountain, with its bright crimson front contrasted with the fringe of forest on its brow, and the verdure of the open plain beneath, filled our canvas with a landscape unsurpassed in unique grandeur by any we had beheld. Our twenty-five miles' perspective included this remarkable mountain, the plain, a part of the lake, and the last graduated summits of the range of hills by which the latter is nearly surrounded. We ardently wished that all the world could view a scene so strangely grand, and our pulse beat high with the hope of one day exhibiting it to our countrymen in some part of our native land. But we were at length compelled to destroy our picture, as a whole, for the purpose of magnifying its parts for scientific inspection. Our plain was of course immediately covered with the ruby front of this mighty amphitheatre, its tall figures, leaping cascades, and rugged caverns. As its almost interminable sweep was measured off upon the canvas, we frequently saw long lines of some yellow metal hanging from the crevices of the horizontal strata in wild net-work, or straight pendant branches. We of course concluded that this was virgin gold, and we had no assay-master to prove to the contrary.

#### More Animals

**O**N searching the plain, over which we had observed the woods roving in all shapes of clouds in the sky, we were again delighted with the discovery of animals. The first observed was a quadruped with an amazingly long neck, head like a sheep, bearing two long spiral horns, white as polished ivory, and standing in perpendicular parallel to each other. Its body was like that of the deer, but its fore-legs were most disproportionately long, and its tail, which was very bushy and of a snowy whiteness, curled high over its rump, and hung two or three feet by its side. Its colors were bright bay and white in brindled patches, clearly defined, but of no regular form. It was found only in pairs, in spaces between the woods, and we had no opportunity of witnessing its speed or habits. But a few minutes only elapsed before three specimens of another animal appeared, so well known to

us all that we fairly laughed at the recognition of *so familiar an acquaintance in so distant a land*. They were neither more nor less than three good large sheep, which would not have disgraced the farms of Leicestershire, or the shambles of Leadenhall-market. With the utmost scrutiny, we could find no mark of distinction between these and those of our native soil; they had not even the appendage over the eyes, which I have described as common to lunar quadrupeds. Presently they appeared in great numbers, and on reducing the lenses, we found them in flocks over a great part of the valley. I need not say how desirous we were of finding shepherds to these flocks, and even man with blue apron and rolled up sleeves would have been a welcome sight to us, if not to the sheep; but they fed in peace, lords of their own pastures, without either protector or destroyer in human shape.

#### The Description Becomes Enthusiastic When Winged Inhabitants Are Seen

**W**E at length approached the level opening to the lake, where the valley narrows to a mile in width, and displays scenery on both sides picturesque and romantic beyond the powers of prose description. Imagination, borne on the wings of poetry, could alone gather similes to portray the wild sublimity of this landscape, where dark behemoth crags stood over the brows of lofty precipices, as if a rampart in the sky; and forests seemed suspended in mid air. On the eastern side there was one soaring crag, crested with trees, which hung over in a curve like three-fourths of a Gothic arch, and being of a rich crimson color, its effect was most strange upon minds unaccustomed to the association of such grandeur with such beauty.

"But whilst gazing upon them in a perspective of about half a mile, we were thrilled with astonishment to perceive four successive flocks of large winged creatures, wholly unlike any kind of birds, descend with a slow, even motion from the cliffs on the western side, and alight upon the plain. They were first noticed by Dr. Herschel, who exclaimed, 'Now, gentlemen, my theories against your proofs, which you have often found a pretty even bet, we have here something worth looking at: I was confident that if ever we found beings in human shape, it would be in this longitude, and that they would be provided by their Creator with some extraordinary powers of locomotion: first exchange for my number D.' This lens being soon introduced, gave us a fine half-mile distance, and we counted three parties of these creatures, of twelve, nine, and fifteen in each, walking erect towards a small wood near the base of the eastern precipices. Certainly they *were* like human beings, for their wings had now disappeared, and their attitude in walking was both erect and dignified. Having observed them at this distance for some minutes, we introduced lens H z which brought them to the apparent proximity of eighty yards; the highest clear magnitude we possessed until the latter end of March, when we effected an improvement in the gas-burners. About half of the first party had passed beyond our canvass; but of all the others we had a perfectly distinct and deliberate view. They averaged four feet in height, were covered, except on the face, with short

and glossy copper-colored hair and had wings composed of a thin membrane, without hair, lying snugly upon their backs, from the top of the shoulders to the calves of the legs. The face, which was of a yellowish flesh color, was a slight improvement upon that of the large orang outang, being more open and intelligent in its expression, and having a much greater expansion of forehead. The mouth, however, was very prominent, though somewhat relieved by a thick beard upon the lower jaw, and by lips far more human than those of any species of the simia genus. In general symmetry of body and limbs they were infinitely superior to the orang outang; so much so, that, but for their long wings, Lieut. Drummond said they would look as well on a parade ground as some of the old cockney militia! The hair on the head was a darker color than that of the body, closely curled, but apparently not woolly, and arranged in two curious semicircles over the temples of the forehead. Their feet could only be seen as they were alternately lifted in walking; but, from what we could see of them in so transient a view, they appeared thin, and very protuberant at the heel.

#### More About the Winged Men and Their Actions

**W**HILST passing across the canvas, and whenever we afterwards saw them, these creatures were evidently engaged in conversation; their gesticulation, more particularly the varied action of their hands and arms, appeared impassioned and emphatic. We hence inferred that they were rational beings, and although not perhaps of so high an order as others which we discovered the next month on the shores of the Bay or Rainbows, that they were capable of producing works of art and contrivance. The next view we obtained of them was still more favorable. It was on the borders of a little lake, or expanded stream, which we then for the first time perceived running down the valley to a large lake, and having on its eastern margin a small wood.

"Some of these creatures had crossed this water and were lying like spread eagles on the skirts of the woods. We could then perceive that they possessed wings of great expansion, and were similar in structure to those of the bat, being a semi-transparent membrane expanded in curvilinear divisions by means of straight radii, united at the back by the dorsal integuments. But what astonished us very much was the circumstances of this membrane being continued, from the shoulders to the legs, united all the way down, though gradually decreasing in width. The wings seemed completely under the command of volition, for those of the creatures whom we saw bathing in the water, spread instantly to their full width, waved them as ducks do theirs to shake off the water, and then as instantly closed them again in a compact form. Our further observation of the habits of these creatures, who were of both sexes, led to results so very remarkable, that I prefer they should first be laid before the public in Dr. Herschel's own work, where I have reason to know they are fully and faithfully stated, however incredulously they may be received.— \* \* \* \* \* The three families then almost simultaneously spread their wings, and were lost in the dark confines of the canvass before we had time to breathe

from our paralyzing astonishment. We scientifically denominated them the *Vespertilio-homo* or man-bat; and they are doubtless innocent and happy creatures, notwithstanding that some of their amusements would ill comport with our terrestrial notions of decorum. The valley itself we called the Ruby colosseum, in compliment to its stupendous southern boundary, the six mile sweep of precipices two thousand feet high. And the night, or rather morning, being far advanced, we postponed our tour to Petavius (No. 20), until another opportunity." We have, of course, faithfully obeyed Dr. Grant's private injunction to omit those highly curious passages in his correspondence which he wished us to suppress, although we do not perceive the force of the reason assigned for it. It is true, the omitted paragraphs contain facts which would be wholly incredible to readers who do not carefully examine the principles and capacity of the instrument with which these marvellous discoveries have been made; but so will nearly all of those which he has kindly permitted us to publish; and it was for this reason that we considered the explicit description which we have given of the telescope so important a preliminary. From these, however, and other prohibited passages, which will be published by Dr. Herschel, with the certificates of the civil and military authorities of the colony, and of several Episcopal, Wesleyan, and other ministers, who, in the month of March last, were permitted, under stipulation of temporary secrecy, to visit the observatory, and become eyewitnesses of the wonders which they were requested to attest, we are confident his forthcoming volumes will be at once the most sublime in science, and the most intense in general interest, that ever issued from the press."

#### The Description Becomes More Specific

**T**HE night of the 14th displayed the moon in her mean libration, or full; but the somewhat humid state of the atmosphere being for several hours less favorable to a minute inspection than to a general survey of her surface, they were chiefly devoted to the latter purpose. But shortly after midnight the last veil of mist was dissipated, and the sky being as lucid as on the former evenings, the attention of the astronomers was arrested by the remarkable outlines of the spot marked Tycho, No. 18, in Blunt's lunar chart; and in this region they added treasures to human knowledge which angels might well desire to win. Many parts of the following extract will remain forever in the chronicles of time:—

"The surface of the moon, when viewed in her mean libration, even with telescopes of very limited power, exhibits three oceans of vast breadth and circumference, independently of seven large collections of water, which may be denominated seas. Of inferior waters, discoverable by the higher classes of instruments, and usually called lakes, the number is so great that no attempt has yet been made to count them. Indeed, such a task would be almost equal to that of enumerating the annular mountains which are found upon every part of her surface, whether composed of land or water. The largest of the three oceans occupies a considerable portion of the hemisphere between the line of her northern axis and that of her eastern equator, and even extends many

degrees south of the latter. Throughout its eastern boundary, it so closely approaches that of the lunar sphere, as to leave in many places merely a fringe of illuminated mountains, which are here, therefore, strongly contra-distinguished from the dark and shadowy aspect of the great deep. But peninsulas, promontories, capes, and islands, and a thousand other terrestrial figures, for which we can find no names in the poverty of *our* geographical nomenclature, are found expanding, sallying forth, or glowing in insular independence, through all the 'billowy boundlessness' of this magnificent ocean. One of the most remarkable of these is a promontory, without a name, I believe, in the lunar charts, which starts from an island district denominated Copernicus by the old astronomers, and abounding, as we eventually discovered, with great natural curiosities. This promontory is indeed most singular. Its northern extremity is shaped much like an imperial crown, having a swelling bow, divided and tied down in its centre by a band of hills which is united with its forehead band or base. The two open spaces formed by this division are two lakes, each eighty miles wide; and at the foot of these, divided from them by the band of hills last mentioned, is another lake, larger than the two put together, and nearly perfectly square. This one is followed, after another hilly division, by a lake of an irregular form; and this one yet again, by two narrow ones, divided longitudinally, which are attenuated northward to the main land. Thus this skeleton promontory of mountain ridges runs 396 miles into the ocean, with six capacious lakes, enclosed within its stony ribs. Blunt's excellent lunar chart gives his great work of nature with wonderful fidelity, and I think you might accompany my description with an engraving from it, much to your reader's satisfaction. (See plate 4.)

#### Mountain and Ocean

**N**EXT to this, the most remarkable formation in this ocean is a strikingly brilliant annular mountain of immense altitude and circumference, standing 330 miles E.S.E., commonly known as Aristarchus (No. 12), and marked in the chart as a large mountain, with a great cavity in its centre. That cavity is now, as it was probably wont to be in ancient ages, a volcanic crater, awfully rivalling our Mounts Etna and Vesuvius in the most terrible epochs of their reign. Unfavorable as the state of the atmosphere was to close examination, we could easily mark its illumination of the water over a circuit of sixty miles. If we had before retained any doubt of the power of lunar volcanoes to throw fragments of their craters so far beyond the moon's attraction that they would necessarily gravitate to this earth, and thus account for the multitude of massive aerolites which have fallen and been found upon our surface, the view which we had of Aristarchus would have set our scepticism forever at rest. This mountain, however, though standing 300 miles in the ocean, is not absolutely insular, for it is connected with the main land by four chains of mountains, which branch from it as a common centre.

"The next great ocean is situated on the western side of the meridian line, divided nearly in the midst by the line of the equator, and is about 900 miles in

north and south extent. It is marked C in the catalogue, and was fancifully called the Mare Tranquillitatis. It is rather two large seas than one ocean, for it is narrowed just under the equator by a strait not more than 100 miles wide. Only three annular islands of a large size, and quite detached from its shores, are to be found within it; though several sublime volcanoes exist on its northern boundary; one of the most stupendous of which is within 120 miles of the Mare Nectaris before mentioned. Immediately contiguous to this second great ocean, and separated from it only by a concatenation of disconnected continents and islands, is the third, marked D, and known as the Mare Serenitatis. It is nearly square, being about 330 miles in length and width. But it has one most extraordinary peculiarity, which is a perfectly straight ridge of hills, certainly not more than five miles wide, which starts in a direct line from its southern to its northern shore, dividing it exactly in the midst. This singular ridge is perfectly *sui generis*, being altogether unlike any mountain chain either on this earth or on the moon itself. It is so very keen, that its great concentration of the solar light renders it visible to small telescopes; but its character is so strikingly peculiar, that we could not resist the temptation to depart from our pre-determined adherence to a general survey, and examine it particularly. Our lens G x brought it within the small distance of 800 yards, and its whole width of four or five miles snugly within that of our canvass. Nothing that we had hitherto seen more highly excited our astonishment. Believe it or believe it not, it was one entire crystallization!—its edge, throughout its whole length of 340 miles, is an acute angle of solid quartz crystal, brilliant as a piece of Derbyshire spar just brought from a mine, and containing scarcely a fracture or a chasm from end to end! What a prodigious influence must our thirteen times larger globe have exercised upon this satellite, when an embryo in the womb of time, the passive subject of chemical affinity! We found that wonder and astonishment, as excited by objects in this distant world, were but modes and attributes of ignorance, which should give place to elevated expectations, and to reverential confidence in the illimitable power of the Creator.

#### The Magnificent Temple in a Beautiful Valley

**T**HE dark expanse of waters to the south of the first great ocean has often been considered a fourth; but we found it to be merely a sea of the first class, entirely surrounded by land, and much more encumbered with promontories and islands than it has been exhibited in any lunar chart. One of its promontories runs from the vicinity of Pitatus (No. 19), in a slightly curved and very narrow line, to Bulliadius (No. 22), which is merely a circular head to it, 264 miles from its starting place. This is another mountainous ring, a marine volcano, nearly burnt out, and slumbering upon its cinders. But Pitatus, standing upon a bold cape of the southern shore, as apparently exulting in the might and majesty of its fires. The atmosphere being now quite free from vapor, we introduced the magnifiers to examine a large bright circle of hills which sweep close beside the western abutments of this flaming

mountain. The hills were either of snow-white marble or semi-transparent crystal, we could not distinguish which, and they bounded another of those lovely green valleys, which, however monotonous in my descriptions, are of paradiseal beauty and fertility, and like primitive Eden in the bliss of their inhabitants. Dr. Herschel here again predicated another of his sagacious theories. He said the proximity of the flaming mountain, Bullialdus, must be so great a local convenience to dwellers in this valley during the long periodical absence of solar light, as to render it a place of populous resort for the inhabitants of all the adjacent regions, more especially as its bulwark of hills afforded an infallible security against any volcanic eruption that could occur. We therefore applied our full power to explore it, and rich indeed was our reward.

"The very first object in this valley that appeared upon our canvass was a magnificent work of art. It was a temple—a fane of devotion, or of science, which, when consecrated to the Creator, is devotion of the loftiest order; for it exhibits His attributes purely free from the masquerade, attire, and blasphemous caricature of controversial creeds, and has the seal and signature of His own hand to sanction its aspirations. It was an equitriangular temple, built of polished sapphire, or of some resplendent blue stone, which, like it, displayed a myriad points of golden light twinkling and scintillating in the sunbeams.

#### Elaborate Description of the Architecture of the Temple

**O**UR canvas, though fifty feet in diameter, was too limited to receive more than a sixth part of it at one view, and the first part that appeared was near the centre of one of its sides, being three square columns, six feet in diameter at its base, and gently tapering to a height of seventy feet. The intercolumniations were each twelve feet. We instantly reduced our magnitude, so as to embrace the whole structure in one view, and then indeed it was most beautiful. The roof was composed of some yellow metal, and divided into three compartments, which were not triangular planes inclining to the centre, but subdivided, curbed, and separated, so as to present a mass of violently agitated flames rising from a common source of conflagration and terminating in wildly waving points. This design was too manifest, and too skilfully executed to be mistaken for a single moment. Through a few openings in these metallic flames we perceived a large sphere of a darker kind of metal nearly of a clouded copper color, which they enclosed and seemingly raged around, as if hieroglyphically consuming it.

"This was the roof; but upon each of the three corners there was a small sphere of apparently the same metal as the large centre one, and this rested upon a kind of cornice, quite new in any order of architecture with which we are acquainted, but nevertheless exceedingly graceful and impressive. It was like a half-opened scroll, swelling off boldly from the roof, and hanging far over the walls in several convolutions. It was of the same metal as the flames, and on each side of the building it was open at both ends. The columns, six on each side, were simply plain shafts, without capitals or pedestals, or any description of ornament; nor was any

perceived in the other parts of the edifice. It was open on each side, and seemed to contain neither seats, altars, nor offerings; but it was a light and airy structure, nearly a hundred feet high from its white glistening floor to its glowing roof, and it stood upon a round green eminence on the eastern side of the valley. We afterwards, however, discovered two others, which were in every respect facsimiles of this one; but in neither did we perceive any visitants besides flocks of wild doves which alighted upon its lustrous pinnacles. Had the devotees of these temples gone the way of all living, or were the latter merely historical monuments? What did the ingenious builders mean by the globe surrounded by flames? Did they by this record any past calamity of *their* world, or predict any future one of *ours*? I by no means despair of ultimately solving not only these but a thousand other questions which present themselves respecting the objects in this planet; for not the millionth part of her surface has yet been explored, and we have been more desirous of collecting the greatest possible number of new facts, than of indulging in speculative theories, however seductive to the imagination.

#### Inhabitants of the Happy "Vale of the Triads"

**B**UT we had not far to seek for inhabitants of this 'Vale of Triads.' Immediately on the outer border of the wood which surrounded, at the distance of half a mile, the eminence on which the first of these temples stood, we saw several detached assemblies of beings whom we instantly recognized to be of the same species as our winged friends of the Ruby Colosseum near the lake of Langrenus. Having adjusted the instrument for a minute examination, we found that nearly all the individuals in these groups were of a larger stature than the former specimens, less dark in color, and in *every respect* an improved variety of the race. They were chiefly engaged in eating a large yellow fruit like a gourd, sections of which they divided with their fingers, and ate with rather uncoutly voracity, throwing away the rind. A smaller red fruit, shaped like a cucumber, which we had often seen pendant from trees having a broad dark leaf, was also lying in heaps in the centre of several of the festive groups; but the only use they appeared to make of it was sucking its juice, after rolling it between the palms of their hands and nibbling off an end. They seemed eminently happy, and even polite, for we saw, in many instances, individuals sitting nearest these piles of fruit, select the largest and brightest specimens, and throw them archwise across the circle to some opposite friend or associate who had extracted the nutriment from those scattered around him, and which were frequently not a few. While thus engaged in their usual banquets, or in social converse, they were always seated with their knees flat upon the turf, and their feet brought evenly together in the form of a triangle. And for some mysterious reason or other this figure seemed to be an especial favorite among them; for we found that every group or social circle arranged itself in this shape before it dispersed, which was generally done at the signal of an individual who stepped into the centre and brought his hands over his head in an acute angle. At this signal each member of the company ex-

tended his arms forward so as to form an acute horizontal angle with the extremity of the fingers. But this was not the only proof we had that they were creatures of order and subordination. \* \* \* \* We had no opportunity of seeing them actually engaged in any work of industry or art; and so far as we could judge, they spent their happy hours in collecting various fruits in the woods, in eating, flying, bathing, and loitering about upon the summits of precipices. \* \* \* \* But although evidently the highest order of animals in this rich valley, they were not its only occupants. Most of the other animals which we had discovered elsewhere, in very distant regions, were collected here; and also at least eight or nine new species of quadrupeds. The most attractive of these was a tall white stag with lofty spreading antlers, black as ebony. We several times saw this elegant creature trot up to the seated parties of the semi-human beings I have described, and browse the herbage close beside them, without the least manifestation of fear on its part or notice on theirs. The universal state of amity among all classes of lunar creatures, and the apparent absence of every carnivorous or ferocious species, gave us the most refined pleasure, and doubly endeared to us this lovely nocturnal companion of our larger, but less favored world. Ever again when I 'eye the blue vault and bless the useful light,' shall I recall the scenes of beauty, grandeur, and felicity, I have beheld upon her surface, not 'as through a glass darkly, but face to face,' and never shall I think of that line of our thrice noble poet,

———'Meek Diana's crest  
Sails through the azure air, an island of the blest,'  
without exulting in my knowledge of its truth."

#### The Great Lens Sets the Observatory on Fire

**W**ITH the careful inspection of this instructive valley, and a scientific classification of its animal, vegetable, and mineral productions, the astronomers closed their labors for the night; labors rather mental than physical, and oppressive, from the extreme excitement which they naturally induced. A singular circumstance occurred the next day, which threw the telescope quite out of use for nearly a week, by which time the moon could be no longer observed that month. The great lens, which was usually lowered during the day, and placed horizontally, had, it is true, been lowered as usual, but had been inconsiderately left in a perpendicular position. Accordingly, shortly after sunrise the next morning, Dr. Herschel and his assistants, Dr. Grant and Messrs. Drummond and Home, who slept in a bungalow erected a short distance from the observatory circle, were awakened by the loud shouts of some Dutch farmers and domesticated Hottentots (who were passing with their oxen to agricultural labor), that the "big house" was on fire! Dr. Herschel leaped out of bed from his brief slumbers, and, sure enough, saw his observatory enveloped in a cloud of smoke.

Luckily it had been thickly covered, within and without, with a coat of Roman plaster, or it would inevitably have been destroyed with all its invaluable contents; but, as it was, a hole fifteen feet in circumference had been burnt completely through

the "reflecting chamber," which was attached to the side of the observatory nearest the lens, through the canvass field on which had been exhibited so many wonders that will ever live in the history of mankind, and through the outer wall. So fierce was the concentration of the solar rays through the gigantic lens, that a clump of trees standing in a line with them was set on fire, and the plaster of the observatory walls, all round the orifice, was vitrified to blue glass. The lens being almost immediately turned, and a brook of water being within a few hundred yards, the fire was soon extinguished, but the damage already done was not inconsiderable. The microscope lenses had fortunately been removed for the purpose of being cleaned, but several of the metallic reflectors were so fused as to be rendered useless. Masons and carpenters were procured from Cape Town with all possible dispatch, and in about a week the whole apparatus was again prepared for operation.

#### Some Notes on Saturn

**T**HE moon now being invisible Dr. Herschel directed his inquiries to the primary planets of the system, and first to the planet Saturn. We need not say that this remarkable globe has for many ages been an object of the most ardent astronomical curiosity. The stupendous phenomenon of its double ring having baffled the scrutiny and conjecture of many generations of astronomers, was finally abandoned as inexplicable. It is well known that this planet is stationed in the system 900 millions of miles distant from the sun, and that having the immense diameter of 79,000 miles, it is more than nine hundred times larger than the earth. Its annual motion round the sun is not accomplished in less than twenty-nine and a half of our years, whilst its diurnal rotation upon its axis is accomplished in 10h. 16m., or considerably less than half a terrestrial day. It has not less than seven moons, the sixth and seventh of which were discovered by the elder Herschel in 1789. It is thwarted by mysterious belts or bands of a yellowish tinge, and is surrounded by a double ring—the outer one of which is 204,000 miles in diameter. The outside diameter of the inner ring is 184,000 miles, and the breadth of the outer one being 7,200 miles, the space between them is 28,000 miles. The breadth of the inner ring is much greater than that of the other, being 20,000 miles; and its distance from the body of Saturn is more than 30,000. These rings are opaque, but so thin that their edge has not until now been discovered. Sir John Herschel's most interesting discovery with regard to this planet is the demonstrated fact that these two rings are composed of the fragments of two destroyed worlds, formerly belonging to our solar system, and which, on being exploded, were gathered around the immense body of Saturn by the attraction of gravity, and yet kept from falling to its surface by the great centrifugal force created by its extraordinary rapidity on its axis. The inner ring was therefore the first of these destroyed worlds (the former station, of which the system is demonstrated in the argument which we subjoin), which was accordingly carried around by the rotary force, and spread forth in the manner we see. The outer ring is another world exploded in fragments, attracted by the law of

gravity as in the former case and kept from uniting with the inner ring by the centrifugal force of the latter. But the latter, having a slower rotation than the planet, has an inferior centrifugal force, and accordingly the space between the outer and inner ring is nearly ten times less than that between the inner ring and the body of Saturn. Having ascertained the mean density of the rings, as compared with the density of the planet, Sir John Herschel has been enabled to effect the following beautiful demonstration. [Which we omit, as too mathematical for popular comprehension.—*Ed. Sun.*]

#### The End of the Story

**D**R. HERSCHEL clearly ascertained that these rings are composed of rocky strata, the skeletons of former globes, lying in a state of wild and ghastly confusion, but not devoid of mountains and seas. \* \* \*

The belts across the body of Saturn he has discovered to be the smoke of a number of immense volcanoes, carried in these straight lines by the extreme velocity of the rotary motion. \* \* \* \* [And these also he has ascertained to be the belt of Jupiter.—But the portion of the work which is devoted to the subject, and to the other planets, as also that which describes the astronomer's discoveries among the stars, is comparatively uninteresting to general readers, however highly it might interest others of scientific taste and mathematical acquirements.—*Ed. Sun.*]

\* \* \* \* "It was not until the new moon of the month of March, that the weather proved favorable to any continued series of lunar observations; and Dr. Herschel had been too enthusiastically absorbed in demonstrating his brilliant discoveries in the southern constellations, and in constructing tables and catalogues of his new stars, to avail himself of the few clear nights which intervened.

"On one of these, however, Mr. Drummond, myself, and Mr. Holmes, made those discoveries near the Bay of Rainbows, to which I have somewhere briefly alluded. The bay thus fancifully denominated is a part of the northern boundary of the first great ocean which I have lately described, and is marked in the chart with the letter O. The tract of country which we explored on this occasion is numbered 6, 5, 8, 7, in the catalogue, and the chief mountains to which these numbers are attached are severally named Atlas, Hercules, Heraclides Verus, and Heraclides Falsus. Still farther to the north of these is the island circle called Pythagoras, and numbered 1; and yet nearer the meridian line is the mountainous district marked R, and called the Land of Drought, and Q, the Land of Hoar Frost; and certainly the name of the latter, however theoretically bestowed, was not altogether inapplicable, for the tops of its very lofty mountains were evidently covered with snow, though the valleys surrounding them were teeming with the luxuriant fertility of midsummer. But the region which we first particularly inspected was that of Heraclides Falsus (No. 7), in which we found several new specimens of animals, all of which were horned and of a white or grey color; and the remains of three ancient triangular temples which had long been in ruins. We thence traversed the country southeastward, until we arrived at

Atlas (No. 6), and it was in one of the noble valleys at the foot of this mountain that we found the very superior species of the Vespertilio-homo. In stature they did not exceed those last described, but they were of infinitely greater personal beauty, and appeared in our eyes scarcely less lovely than the general representations of angels by the more imaginative schools of painters. Their social economy seemed to be regulated by laws or ceremonies exactly like those prevailing in the Vale of the Triads, but their works of art were more numerous, and displayed a proficiency of skill quite incredible to all except actual observers. I shall, therefore, let the first detailed account of them appear in Dr. Herschel's authenticated natural history of this planet."

[This includes the Supplement, with the exception of forty pages of illustrative and mathematical notes, which would greatly enhance the size and price of this work, without commensurably adding to its general interest.—*Ed. Sun.*]

#### Opinions of the American Press Respecting the Foregoing Discovery

"HERSCHEL'S GREAT DISCOVERIES.—We are too much pleased with the remarks of the sensible, candid, and scientific portions of the public press upon the extracts which we have published relative to these wonders of the age, to direct our attention very severely to-day to that sceptical class of our contemporaries to whom none of these attributes can be ascribed. Consummate ignorance is always incredulous to the higher order of scientific discoveries, because it cannot possibly comprehend them. Its mental thorax is quite capacious enough to swallow any dogmas, however great, that are given upon the authority of names; but it strains most perilously to receive the great truths of reason and science. We scarcely ever knew a very ignorant person who would believe in the existence of those myriads of invisible beings which inhabit a drop of water, and every grain of dust, until he had actually beheld them through the microscope by which they are developed. Yet these very persons will readily believe in the divinity of Matthias the prophet, and in the most improbable credenda of extravagant systems of faith. The *Journal of Commerce*, for instance, says it cannot believe in these great discoveries of Dr. Herschel, yet it believes and defends the innocence of the murderer of Avery. These who in a former age imprisoned Galileo for asserting his great discoveries with the telescope, and determined upon sentencing him to be burnt alive, nevertheless believed that Simon Magus actually flew in the air by the aid of the devil, and that when that aid was withdrawn he fell to the ground and broke his neck. The great mechanical discoverer, Worcester, obtained no credence for his theories in his day, though they are now being continually demonstrated by practical operation. Happily, however, those who impudently and ignorantly deny the great discoveries of Herschel, are chiefly to be found among those whose faith or whose scepticism, would never be received as a guide for the opinions of other men. From among that portion of the public press whose intelligence and acquirements render them competent judges of the great scientific questions now

before the community, we extract the following frank declarations of their opinions."—*New York Sun*, Sep. 1, 1835.

"No article, we believe, has appeared for years, that will command so general a perusal and publication. Sir John has added a stock of knowledge to the present age that will immortalize his name, and place it high on the page of science."—*Daily Advertiser*.

*L* "DISCOVERIES IN THE MOON.—We commence today the publication of an interesting article which is stated to have been copied from the *Edinburgh Journal of Science*, and which made its first appearance here in a cotemporary journal of this city. It appears to carry intrinsic evidence of being an authentic document."—*Mercantile Advertiser*.

"STUPENDOUS DISCOVERY IN ASTRONOMY.—We have read with unspeakable emotions of pleasure and astonishment, an article from the last *Edinburgh Scientific Journal*, containing an account of the recent discoveries of Sir John Herschel at the Cape of Good Hope."—*Albany Daily Advertiser*.

"It is quite proper that the *Sun* should be the means of shedding so much light on the *Moon*. That there should be winged people in the Moon does not strike us as more wonderful than the existence of such a race of beings on earth; and that there does or did exist such a race rests on the evidence of that most veracious of voyagers and circumstantial of chroniclers, Peter Wilkins, whose celebrated work not only gives an account of the general appearance and habits of a most interesting tribe of flying Indians, but also of all those more delicate and engaging traits which the author was enabled to discover by reason of the conjugal relations he entered into with one of the females of the winged tribe."—*N. Y. Evening Post*.

"We think we can trace in it marks of transatlantic origin."—*N. Y. Commercial Advertiser*.

"The writer (Dr. Andrew Grant) displays the most extensive and accurate knowledge of astronomy, and the description of Sir John's recently improved instruments, the principle on which the inestimable improvements were founded, the account of the wonderful discoveries in the moon, &c., are all probable and plausible, and have an air of intense verisimilitude."—*N. Y. Times*.

GREAT ASTRONOMICAL DISCOVERIES! — By the late arrivals from England there has been received in this country a supplement to the *Edinburgh Journal of Science* containing intelligence of the most astounding interest from Prof. Herschel's observatory at the Cape of Good Hope. . . . . The promulgation of these discoveries creates a new era in astronomy and science generally."—*New Yorker*.

"Our enterprising neighbors of the *Sun*, we are pleased to learn, are likely to enjoy a rich reward

from the late *lunar* discoveries. They deserve all they receive from the public—"they are worthy."—*N. Y. Spirit of '76*.

"After all, however, our doubts and incredulity may be wrong to the learned astronomer, and the circumstances of this wonderful discovery may be correct. Let us do him justice, and allow him to tell his story in his own way."—*N. Y. Sunday News*.

"The article is said to be an extract from a supplement to the *Edinburgh Journal of Science*. It sets forth difficulties encountered by Sir John, on obtaining his glass castings for his great telescope, with magnifying powers of 42,000. The account, *excepting the magnifying power, has been before published*" [i. e., in the Supplement to the *Edinburgh Journal of Science*.—Ed. *Sun*.]—*U. S. Gazette*.

"It is not worth while for us to express an opinion as to the truth or falsity of the narrative, as our readers can, after an attentive perusal of the whole story, decide for themselves. Whether true or false, the article, is written with consummate ability and possesses intense interest."—*Philadelphia Inquirer*.

"These are but a handful of the innumerable certificates of credence, and of complimentary testimonials with which the universal press of the country is loading our tables. Indeed, we find very few of the public papers express any other opinion. We have named the *Journal of Commerce* as an exception, because it not only ignorantly doubted the authenticity of the discoveries, but ill-naturedly said that we had fabricated them for the purpose of making a noise and drawing attention to our paper.

"Col. Webb of the *Courier and Inquirer* has said nothing upon the subject; but he only feels the more, and we are this moment assured that he has made arrangements with the proprietors of the Charleston steam-packets to take the splendid boat William Gibbons of that line, and charter her for the Cape of Good Hope, whither he is going with all his family—including Hoskin.

"We yesterday extracted from the celebrated Supplement, a mathematical problem demonstrating an entirely new, and the only true method of measuring the height of the lunar mountains. We were not then aware of its great importance as a demonstration, also, of the authenticity of the great discoveries. But several eminent mathematicians have since called and assured us, that it is the greatest mathematical discovery of the present age. Now, that problem was either predicated by us, or by some other person, who has thereby made the greatest of all modern discoveries in mathematical astronomy. We did not make it, for we know nothing of mathematics whatever; therefore, it was made by the only person to whom it can rationally be ascribed, namely Herschel the astronomer, its only avowed and undeniable author."—*Editor of the Sun*.



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## In The Abyss (Concluded)

padded compartment began spinning about him, and he fainted. His next recollection was of his cabin, and of the doctor's voice.

But that is the substance of the extraordinary story that Elstead related in fragments to the officers of the *Ptarmigan*. He promised to write it all down at a later date. His mind was chiefly occupied with the improvement of his apparatus, which was effected at Rio.

It remains only to tell that on February 2, 1896, he made his second descent into the ocean abyss, with the improvements his first experience suggested. What happened we shall probably never know. He never returned. The *Ptarmigan* beat about over the point of his submersion, seeking him in vain for thirteen days. Then she returned to Rio, and the news was telegraphed to his friends. So the matter remains for the present. But it is hardly probable that no further attempt will be made to verify his strange story of these hitherto unsuspected cities of the deep sea.

THE END.

## A "PSALM" OF LIGHT

BY BETA

Tell me not in Einstein's numbers  
Time is but an empty dream  
And the space is dead that cumbers  
And things are not where they seem.  
Time is real, space is earnest  
V' er c is but a tool  
With which thou perhaps discernest  
But a jot of nature's rule.  
Not Minkowski, nor no Riemen,  
Framed our destined end or way;  
Nor yet Maxwell nor his demon  
Fix the ether or its sway.  
Larmor's curls and Planck's equation  
Order not one single flash,  
Nor can Lorentz' transformation  
Transcend mortal's mental hash.  
Whims of wranglers all remind us  
"As the twig, the tree's inclined."  
And how'er their bents may blind us  
"Naught exists without the mind."  
Wrangler's art is set on axioms,  
Man-conceived, by man expressed  
And like most of man's contraptions  
May have faults when brought to test.  
Let us then not be excited

Just because the starlight curves.—  
Euclid's line was thought, not sighted,  
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